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AVIATION WEEK

DEC. 8, 1947

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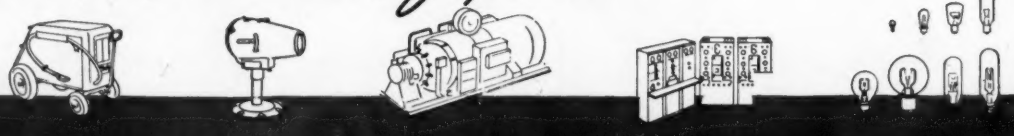

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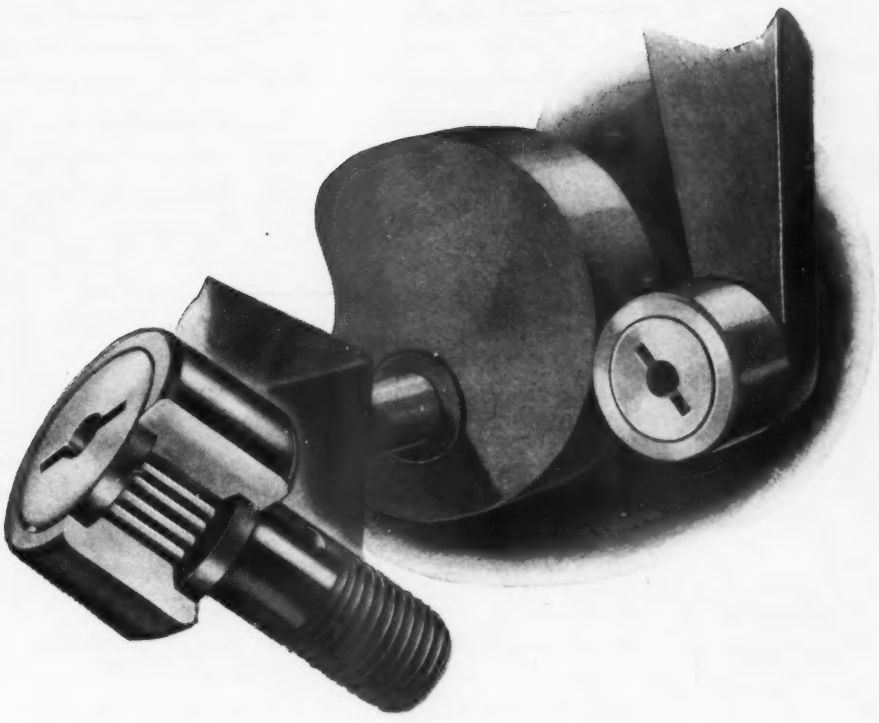

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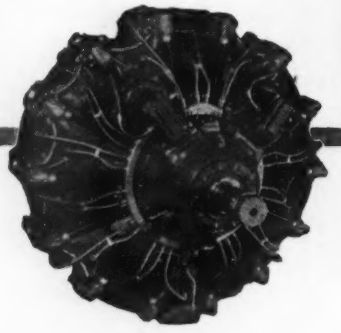

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Vol. 47 No. 23

AVIATION WEEK

Dec. 8, 1947

INCORPORATING AVIATION AND AVIATION NEWS

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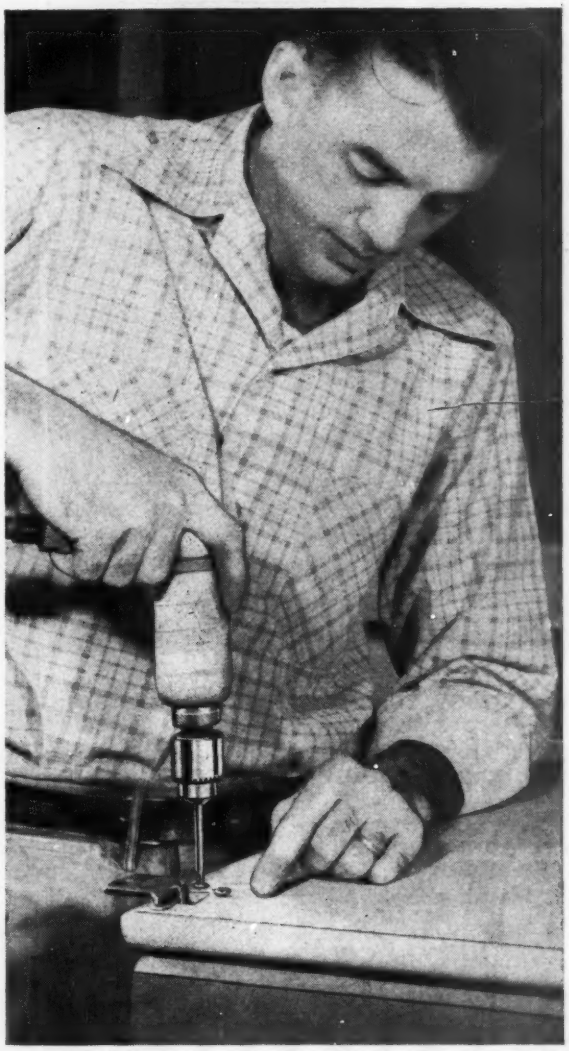

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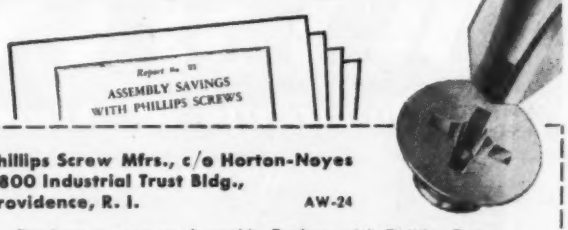

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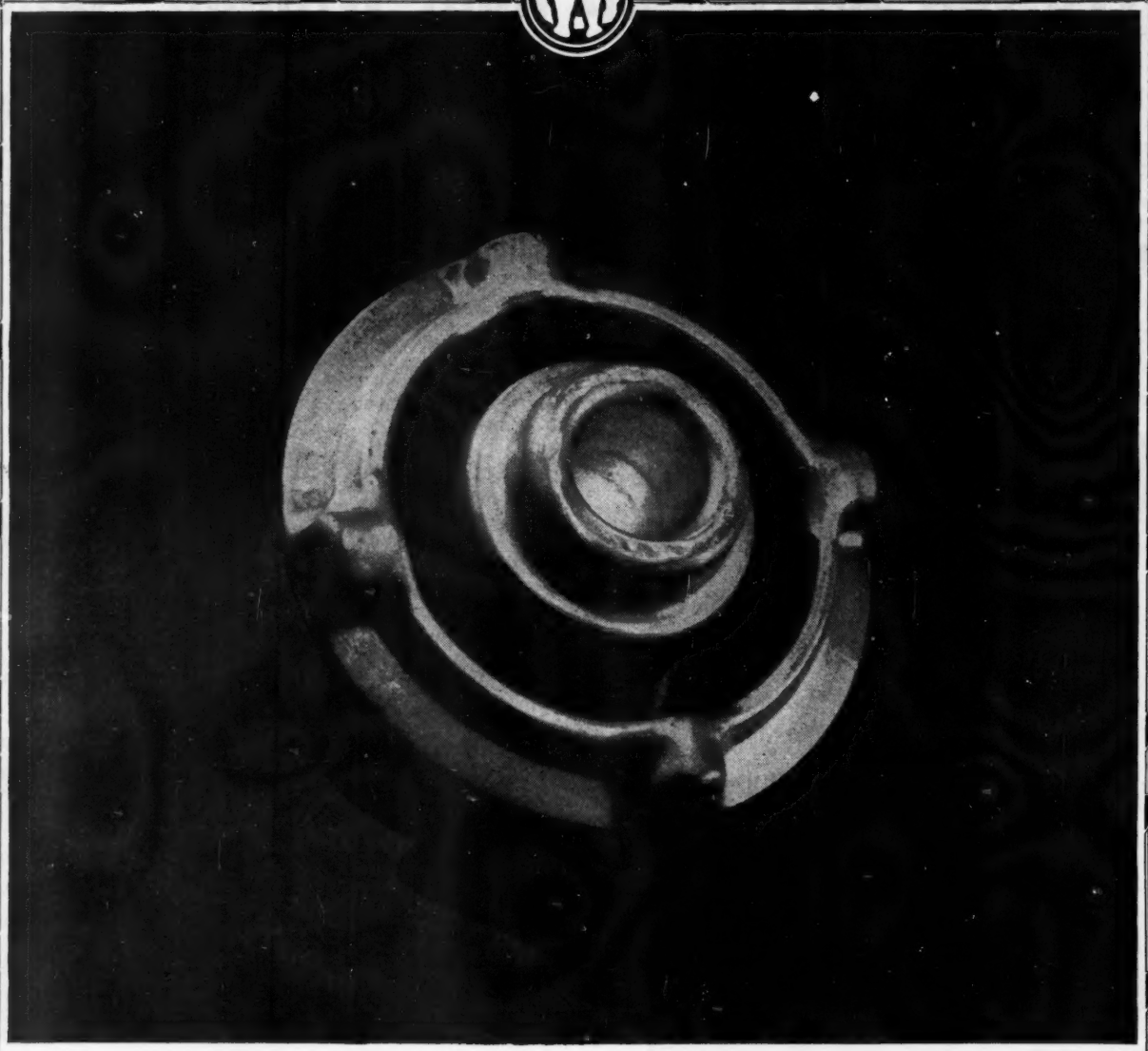

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THE AVIATION WEEK

SECURITY VS. BUDGET—Congress' power of the purse was never more dramatically—if subtly—illustrated than in the statement before the Air Policy Commission of Secretary of Air Symington and Vice Chief of Air Force Staff Vandenberg. Obviously, a number of interpretations can be put on a statement that was as startling in its very issuance as it was in content. Not the least important interpretation is that the dictates of security ran smack into the desire for greater appropriations, and security lost.

Perhaps nothing so well pinpoints the nature of the Symington-Vandenberg statement as the comment of a member of the Washington staff of AVIATION WEEK: "It (the statement) far exceeds anything previously put out on the subject and in fact appears to me to be a security violation of a very genuine nature. If we had asked for that dope we would have been given a severe lecture on security."

PREMEDITATED BREAK—In assessing this astonishing break with traditional military policy, it might be well to consider that the size and composition of our Air Force was elicited from Symington and Vandenberg with little pressure.

Both came prepared, with the figures already typed on a separate sheet of paper. Symington's aide later took pains to see that those at the press table covering the hearing had the figures correct.

In addition, W. Stuart Symington is not one to be easily cornered by questioners. He gave because he wanted to give.

The reason is not difficult to determine. It is the conclusion that must have been reached by Air Force leaders that at this moment the need for greater appropriations from Congress far outweighs any other consideration. This, by nature a philosophical atom bomb, sets up a chain of mental reactions among those observing the workings of the military mind over a long period of time.

NO WOLF CRY—Probably paramount of those reactions is the sobering realization that this time there can be no belittling of an Air Force drive for funds. Appeals (passioned or impassioned) for funds by every government agency are to be expected every year about this time—shortly before the opening of Congressional budget hearings. It has been sort of a game for years. Every government official has cried "wolf" so often it is customary automatically to discount the appeals.

But the Symington-Vandenberg statement cannot be discounted, as it reveals the most careful-guarded information in the Air Force's war chest. There is little more they could tell about the Air Force as a military arm.

For perhaps the first time it is possible to turn the tables on the Air Force leaders and, levelling the usual accusing finger, echo the words so often on their own lips: "You have saved a potential enemy years of intelligence work."

AID TO THE PUBLIC—However, a judicious appraiser would do nothing of the sort. For what the disclosure before the Policy Commission has done is for the first time to bring the American public—the taxpayers—up to date on the state of its Air Force. Stripped of generalities and bombastically glowing promises, the statement laid it on the line. The effect should be salutary.

It should be an effect, moreover, that was carefully calculated in advance. More and more there seems to be a pattern in government officials' statements before the Policy Commission. Gen. Spaatz' assessment of Russian airpower was part of it. So, too, was acting Secretary of State Lovett's call for a larger Air Force.

The pattern, which can only be credited to the new civilian influence in Air Force public relations, seems to be to give the public all the facts, confident that it will require the correct decisions from Congress.

RUSSIAN ANGLE—However, that may be an entirely too-charitable crediting of Air Force motives. It is just as possible that the Symington-Vandenberg disclosure points to an exactly opposite view of the public's interest. The compelling reason for divulging the information may have been possession by the Air Force of facts about Russian aviation which the USAF is unwilling to give the public.

Acceptance of this view would lead to the belief that the information regarding our own aviation was primarily directed at Russia, with the American public being the guy in the bleachers who caught the foul tip.

An air force, like any other military force, obviously is an arm of a country's international policy. Gen. Vandenberg stated that the Air Force's strength was based on an estimate by the State Department of the international situation for the next five years. It is significant that Gen. Spaatz, in summing up Russian aviation for the Policy Commission estimated five years as our maximum period of security if Russia continued its present foreign policy.

In weighing Spaatz' statement that Russia has as many as 14,000 planes in active service, qualified authorities pause to consider what types they are. Russian employment of aviation in World War II was distinguished by a disregard of the concept of strategic air operations. U. S. Air Force preoccupation with the fact that Russia has duplicated the B-29 would indicate that Russian ideas on military aviation have changed.

Therein may lie the key to the Air Force drive for funds which resulted in one of the most amazing public statements in recent Washington memory.

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NEWS DIGEST

DOMESTIC

President Truman officially nominated John R. Alison as Assistant Secretary of Commerce for Air by submitting his name to the Senate, now in session.

California Growers Air Express, Van Nuys, Calif., has been denied a CAB letter of registration permitting common carrier operations as an uncertificated all-cargo line.

Capital Airlines (PCA) will inaugurate service to Toledo, Ohio on Jan. 7, 1948.

Willis Air Service, Teterboro, N. J., has been denied a CAB exemption authorizing freight service between the U. S. and Puerto Rico under the carrier's letter of registration as an uncertificated all-cargo line.

John Guenther was appointed eastern public relations manager for Lockheed Aircraft Corp. He was an editor of Newsweek and AAF pilot during the war.

FINANCE

Grumman Aircraft Engineering Corp. declared a dividend of $1.50 per share common stock payable Dec. 24. This matches a previous dividend paid August 21, bringing the year's total to $3.00. This is in comparison with $2.00 total distributed last year.

National Aviation Co. declared a 12½ cent dividend, making a total of 25 cents declared this year, in comparison with $1.35 last year.

Bell Aircraft Corp. reports a $381,163 loss for the first nine months of the year, after giving effect to a tax carryback refund of $945,000. This $1,326,163 operating loss was sustained on sales of $10,645,705 and a total income of $10,936,619. President Lawrence D. Bell attributes the loss to heavy development costs on helicopter models.

Braniff Airways, Inc. reports net loss of $72,744 for the third quarter on total revenue of $3,093,291. This compares with a $113,888 profit on revenue of $3,148,531 for the same period last year.

FOREIGN

Norwegian Airlines (DNL) has ordered a new four-engine Sandringham Mark VI flying boat from Short Brothers, Ltd., England, for delivery next spring.

Steward Ormond of Winnipeg has been elected president of the Air Industries and Transport Association of Canada.

British South American Airways flew an Avro Tudor IV 3,524 miles non-stop from Bermuda to London at an average ground speed of 310 mph.

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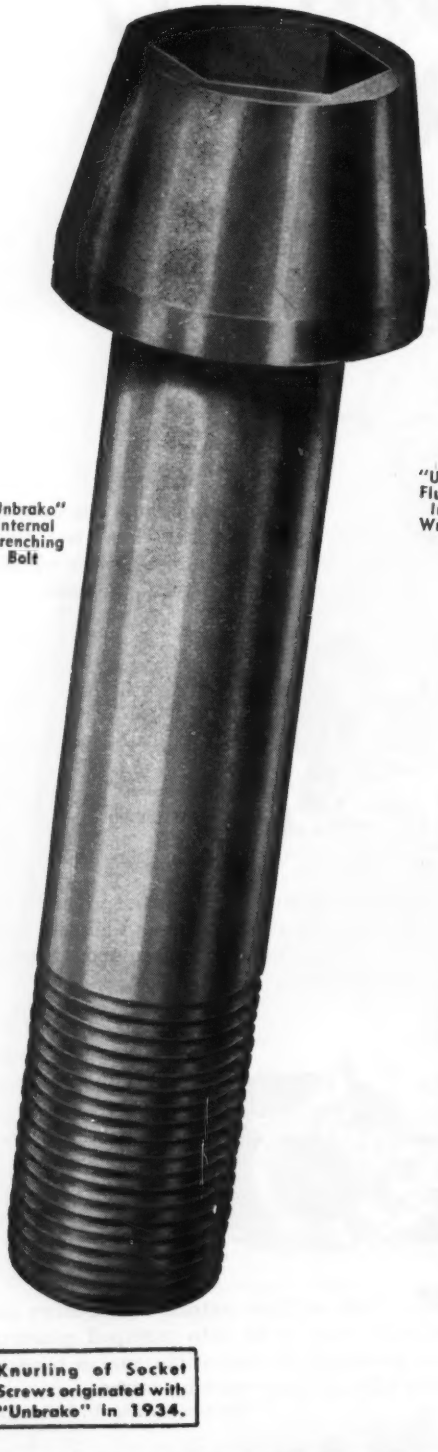

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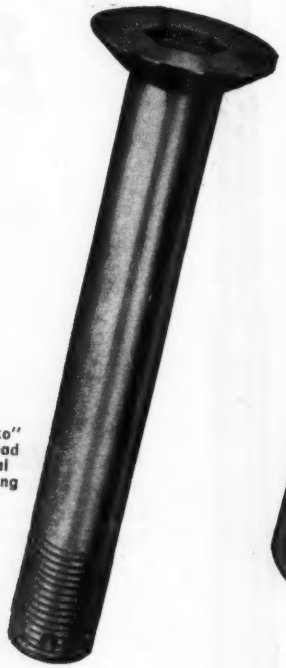

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Vol. 47 No. 23

AVIATION WEEK

Dec. 8, 1947

INCORPORATING AVIATION AND AVIATION NEWS

Air Force Seeks 12,441 Planes For Adequate U. S. Defense Force

Wants 131 groups including 70 groups of regulars; 3,200 annual plane production rate; funds to add 5,295 planes to reserves and storage pool.

First detailed breakdown of Air Force requirements for what it considers an adequate air defense of the United States was given to the President's Air Policy Commission last week by Air Force Secretary W. Stuart Symington and Gen. Hoyt S. Vandenberg, Air Force vice chief of staff.

Program will require 131 air groups with a total of 12,441 planes of which 6,869 will be first line combat planes in the regular Air Force backed by a reserve of 8,100 planes. The reserve will include 3,212 National Guard planes, 2,360 planes in organized air reserve units and 2,528 in storage. Annual production rate of 3,200 military planes with airframe weight of 46,414,000 lb. is necessary to maintain the regular Air Force. Annual transfer of 1,800 planes from the regulars to reserve components is planned. At present only 2,805 of the types required for the 8,100 reserve are available necessitating purchase of 5,295 planes in addition to the 3,200 annual production rate.

▶ **To Last 18 Months**—Gen. Vandenberg pointed out that this Air Force was on a State Department estimate of the international situation for the next five years and was deemed sufficient to fight the first 18 months of any future war. Vandenberg said that the Air Force plans allotted that much time for the expansion of the aircraft industry to match wartime attrition rates and lay the groundwork for whatever expansion of the air force that was deemed necessary to win the conflict.

▶ **Scorns Subsidy**—Secretary Symington told the policy group that it was foolish to talk of a subsidy for the aircraft manufacturing industry when the Air Force minimum requirements exceeded the industry's estimates of the amount of business necessary to keep it in a healthy condition. He asserted that the military requirements outlined above would keep the aircraft industry in a position where its production facilities could easily be expanded to meet wartime demands. Symington also warned that it was foolish to expect that a peacetime economy could support an aircraft industry anywhere near its wartime peak and that the bankruptcy of some aircraft manufacturers was inevitable.

Backbone of the air program is the 70 group regular Air Force of 6,689 planes. Current Air Force strength is about 40 fully manned groups and is expected to hit 55 groups by Jan. 1. Strategic striking force will be 21 very heavy bomber groups aided by five very long range reconnaissance groups (150 planes).

Bomb groups will contain 630 long range bombers designed to provide an operational striking force of 500 planes. Strategic Air Command's striking force is now about 150 planes but 250 additional B-29's are now being transferred from storage to active groups. Boeing B-29's of the Strategic Air Force are scheduled for replacement by Boeing B-50's and Convair B-36's as fast as procurement funds and production schedules can provide them. Boeing has an order for 130 B-50's. Convair's B-36 contract calls for 100 planes with an upward revision already in the mill.

▶ **Long Range Recon.**—Two leading contenders in long range reconnaissance planes are the Republic XF-12 and Howard Hughes' XF-11. Republic has an order for 20 photo versions of the F-12. Hughes' plane is undergoing second phase flight tests at Muroc. Although the Air Force is not anxious to give the XF-11 any publicity after Hughes' testimony on the "Wright Field Hate Hughes Club" before a Senate investigating committee, reports seeping out of the desert test center indicate the XF-11 is performing sensationally.

Five light bomber groups (240 planes) are planned. With recent changes in Air Force classification these groups can include planes equalling range and bomb load of wartime heavy bombers. Replacements for the Douglas A-26, now in service, will come from the multi-jet bombers recently flown by North American (B-45); Convair (B-46); and Boeing (B-47). The Martin XB-48 appears to be out of the production picture. Only jet bomber production contract awarded so far has been awarded North American to build 100 B-45's.

▶ **Fighter Strength**—Fighter strength will come to 22 normal fighter groups plus three all-weather fighter groups and four tactical reconnaissance groups (about 2,175 planes). Tactical recon groups consist of fighters specially equipped with cameras for low level photo work. Republic's P-84 is the only new jet fighter now in production as a Lockheed P-80 replacement but an entirely new stable of rocket and jet powered fighters is in the experimental stage with McDonnell, Lockheed, Republic, and Convair all building entries in the design competition. (AVIATION WEEK, July 21). North American will get a production order for its P-86 Sweptwing transonic jet fighter. Two all-weather fighter types are still in the experimental stage — Curtiss-Wright's XP-87 and Northrop's XP-89.

Ten troop carrier groups are scheduled (about 360 planes). Fairchild C-82's are currently standard troop carrier equipment. A greatly modified version of the C-82—the C-119A—also built by Fairchild is scheduled as the Packet's replacement. Future of troop carrier aircraft will depend on how the role of paratroopers fares in the current evolution of ground force tactics.

▶ **Special Squadrons**—Remainder of the

planes will be devoted to 22 special squadrons including air-sea rescue units, helicopters, liaison teams, etc., plus the Air Transport and Training Commands. Only replacements now scheduled for ATC's standard C-54 operations are Boeing C-97 Stratofreighters 13 of which are already completed. Training Command is drawing up specifications for a new type trainer that will more closely approximate tactical planes and allow students to practice gunnery, rocketry and bombing.

Air National Guard's 3,212 planes will be distributed among 27 groups of which 18 have already been activated. Only 1,904 of the required planes are currently available from Air Force surplus storage.

▶ **Reserve Program**—Air Reserve calls for 34 groups and 2,360 planes of which only 1,284 planes are available. These planes now in use are mostly advanced trainers rather than the tactical types required by an effective reserve program.

Gen. Vandenberg told that group that the Air Force would need a substantially increased appropriation to reach a strength of 70 groups. Although Air Force strength will reach 55 groups by Jan. 1, Vandenberg said it would decline to 40 groups by next fall if current appropriations rates were maintained due to rising cost of aircraft and supplies.

Aircraft Shipments Up 23% for September

Aircraft manufacturing industry delivered $64 million worth of completed aircraft and spare parts during September, according to a joint tabulation of the Bureau of the Census and the Civil Aeronautics Administration. Of this total $60.9 million was aircraft and parts and $3 million was other products including conversion of surplus aircraft. These shipments were up 23 percent over the previous month.

Military deliveries accounted for $37.8 million, 62 percent of the total. These comprised 323 military aircraft, up 53 percent over August. Companies working on U. S. military contracts expected to make deliveries worth $249.6 million in the next six months.

▶ **Engine Totals**—Aircraft engine shipments were up 23 percent in September with deliveries totaling $26.6 million. Of this total, $22.7 million, or about 85 percent, were for U. S. military customers. Military aircraft engine deliveries scheduled for the next six months amounted to $147.8 million.

▶ **Exports Rise**—Exports of aircraft increased 38 percent over August with a total of 185 complete aircraft being shipped. About 68 percent of the value of these aircraft was for new four-engined passenger transport planes.

PRODUCTION PROGRESS REPORT

All Manufacturers

Month	2-Place	3-4 Place	Transports	Military	Total	Value*
January	969	1,176	21	111	2,277	$53,210,421
February	793	1,109	12	99	2,013	56,157,550
March	789	972	24	137	1,922	55,363,825
April	964	1,042	32	105	2,143	58,505,836
May	847	771	28	94	1,740	62,970,218
June	590	572	31	139	1,332	90,657,575
July	475	508	15	104	1,102	44,877,858
August	434	470	25	211	1,140	53,240,991**
September	547	431	50	323	1,351	63,903,155
	6,408	7,051	238	1,323	15,020	$538,887,429

* Includes aircraft, parts, conversions, all other products and all payments to military contractors during their period. Table based on "Facts for Industry" of the Bureau of the Census.

** Revised figure.

Personal Aircraft Companies

Reporting to Aircraft Industries Association

	Shipments			Value		
	Jan.-Oct.	Oct.	Sept.	Jan.-Oct.	Oct.	Sept.
Aeronca	1,454	193	217	$2,631,000	$156,000	$371,000
All American	1	1	...	3,000	3,000	.....
Beech	1,045	101	201	6,703,000	757,000	1,398,000
Bellanca	201	8	8	1,005,000	40,000	40,000
Cessna	2,311	66	155	5,539,000	295,000	527,000
Engineering & Research	733	35	43	2,001,000	91,000	111,000
Funk	33	N.A.	4	123,000	N.A.	12,000
Luscombe	1,184	108	118	2,988,000	257,000	279,000
North American	853	...	11	5,021,000	.....	59,000
Piper	3,337	93	122	7,425,000	197,000	247,000
Republic	797	15	18	3,808,000	70,000	87,000
Stinson	2,357	205	160	10,089,000	915,000	709,000
Taylorcraft	160	N.A.	13	301,000	N.A.	23,000
Texas Engineering	165	36	24	642,000	108,000	98,000
Totals	14,672	862	1,094	$48,286,000	$3,089,000	$3,961,000

Notes: Beech figures do not include Jan., Feb. and March. Aeronca figures include shipments of L-16s to the Army which were 113 in Oct. and total 298 for the year. Funk and Taylorcraft figures are for year through Sept. only.

Thirteen companies reported shipments of 764 personal aircraft during the month of October, according to the AIA Personal Aircraft Council. Of this total 385 were two-place and 379 were three and four-place with a total value of $2,924,000. These shipments are down 22 percent over the previous month reflecting a combination seasonal decline and falling off of demand.

In addition to these civilian models, Aeronca delivered a total of 113 model L-16A two-place liaison models to the Air Force.

Alfred Marchev Dies, Was Republic Head

Alfred J. Marchev, production expert who was largely responsible for the outstanding wartime record of Republic Aviation Corp. of which he was the president, died at his home in Garden City, L. I., at the age of 51. He had been suffering from a heart ailment.

At the time of his death, Mr. Marchev was president of Aircraft Screw Products Co., Long Island City, N. Y. He resigned the presidency of Republic Jan. 1, 1947 to become chairman of the board. He resigned that position in May, due to his illness and several months thereafter took over the presidency of Aircraft Screw Products.

Mr. Marchev was born in Zurich, Switzerland and came to the U. S. in 1919. He was an executive of several manufacturing firms before going to Republic in 1942 as assistant to President Ralph Damon. He became Republic president the following year.

Widely known for his advanced production engineering thinking and methods, Mr. Marchev held more than 500 patents for manufacturing processes.

Agreement Announced

An agreement between KLM, Aer Lingus and British European Airways allows for an inter-availability of airline tickets on the Dublin-Manchester-Amsterdam and London-Amsterdam routes has been announced.

ILS INSTALLATIONS IN REGULAR USE NOV. 1

Eleven certificated airlines entered the winter flying season with authority to utilize instrument landing aids at 41 cities. As of Nov. 1, ILS installations were in regular use at the 39 points shown above. Braniff Airways had authority to land with 200-ft. ceilings and half-mile visibility at six cities. Carriers with authority to operate with 300-ft. ceilings and three-quarters of a mile visibility were American, Delta, Continental, Chicago & Southern, Northeast, Pan American, Southwest, Eastern, National and United. A total of 52 ILS installations were completed by CAA and ready for regular use by Nov. 21, with 47 other installations underway.

CAA Personnel Sloppy in ILS Monitoring, ATA Survey Shows

Check of 52 ILS installations reveals flaws in 31; finds automatic alarm lights and horns disconnected in some towers.

By ROBERT HOTZ

Sharp criticism of Civil Aeronautics Administration personnel charged with maintenance and monitoring of the CAA-sponsored Instrument Landing System was made by the Air Transport Association in a 63 page confidential report to its member airlines. The report also disclosed some operational flaws that require correction at 31 of the 52 ILS installations checked. CAA recently announced its approval of operational use of ILS by 11 airlines at 41 fields in weather below minimums now required for radio range approaches.

The bulky ATA report, which varies considerably from a three-page ATA press release on the same subject, was based on a flight and ground check of the 52 domestic ILS installations that have been commissioned by CAA. Flight research was conducted in ATA's DC-3 research plane with W. E. Dusty Rhoades and Charles Mc Atee each piloting for half of the survey. CAA technicians checked and calibrated all instruments and ILS receivers in the plane. Numerous CAA personnel were aboard during various parts of the survey.

▶ **Worst Practice**—Worst condition uncovered by the survey was the practice in several CAA-operated control towers of disconnecting warning horns and lights that called attention to ILS malfunctions because the noise and light annoyed tower personnel. These conditions were found at both Newark and La Guardia fields—two of the fields handling heaviest airline traffic—in addition to several other control towers handling substantial airline traffic. At La Guardia tower, operators were reported too busy to notice malfunctions of the ILS set indicated by the monitoring panel in the tower.

"Some CAA control tower and communications personnel appear not to have been sufficiently impressed regarding the importance of the ILS monitoring system," the report noted. "Some maintenance personnel are not entirely familiar with the function of the monitor and the present system of monitoring operation of ILS is not always being administered satisfactorily."

Among the principal criticisms of the monitoring system itself are:

• **Failure of the system** to check glide path position. While variation in localizer position is shown by the monitor only signal strength of glide path is checked. ATA recommends that until CAA devises a positive check on glide path position airlines should not rely on ILS for actual instrument approaches below 200 ft. CAA has indicated that it will not authorize ILS use below 200 ft.

• **Failute of the system** to provide a check on any one of the seven parts of the ILS system faster than every 60 seconds. At standard approach speeds of between 100 and 120 mph., rate of descent along the glide path is about 400 ft. per minute and 60 seconds on a malfunctioning glide path would be ample time to cause a fatal accident.

ATA recommended that CAA personnel check the monitoring system, which has a panel in both control tower and communications stations, at least twice a day at a standardized, well-publicized time; delegate certain control tower personnel to be responsible

for checking the monitor panel during actual instrument weather when ILS is in use and for immediate warning to aircraft of malfunctions in the system; and immediate action to eliminate the detailed discrepancies found at particular ILS installations.

Charles I. Stanton, deputy CAA administrator, who has read the ATA report, said he believed that monitoring techniques of CAA tower personnel would improve with increased use of the ILS system by the airlines.

▶ **GCA Check**—In addition to checking ILS, the ATA survey tried to determine whether it is safe to use CAA-operated GCA sets at Chicago, New York and Washington. The Chicago set, operated by CAA Region Two personnel, gave the ATA plane a GCA approach that was "equal in precision and accuracy" to a similar ILS approach at the same field. First attempts at New York and Washington, operated by Region One found both sets there inoperative. A subsequent attempt at New York resulted in a generally satisfactory, though not excellent GCA approach. Range there is limited to 11 miles by use of localizer frequency for GCA voice transmission. A second attempt at Washington found the set still inoperative and the report noted "this is the most recent of a number of refusals we have had on the Washington GCA."

One of Howard Hughes's modified AAF-APS-13 radar terrain clearance indicators was also tested on the survey in both mountainous country and for low approaches. It was found to be satisfactory and accurate within plus or minus 50 ft.

▶ **Autopilot Approaches**—All of the ILS approaches by ATA were made in relatively good weather so they provide no data on the operational bugs of ILS in use during wet weather when the worst signal variations are encountered. ILS approaches with the aircraft receivers coupled to a Sperry A-12 autopilot were made at 34 fields down to an altitude of 25 ft. Pictures taken out of the cockpit window at the instant the autopilot was disengaged indicated the plane was well lined up both directionally and for altitude to complete the landing easily.

Detailed finding of the ATA survey at stations where unfavorable conditions were noted follows:

Albuquerque—Glide path width excessive.

Arcata, Calif.—Recommend routine operational low approaches under bad visibility approaches not be attempted until adequate monitoring is secured; that in view of surrounding terrain airline low approaches be made only during low stratus conditions when surrounding terrain is visible on top of clouds.

Atlanta—Glide path angle excessively low.

Austin—Improve reliability of monitor.

Bakersfield, Calif.—Take steps to insure continuous service of this facility which now operates only on request due to county's desire to save electricity.

Billings — Localizer course excessively broad; turning off glide path remotely failed to set off monitor alarm; reduction of glide path signal strength did set off the alarm.

Brownsville—Glide path width excessive.

Cheyenne—Glide path width excessive.

Chicago (Municipal)—Control of ground traffic necessary in vicinity of localizer during actual instrument approaches so as not to disturb course; warning horn disconnected.

Cleveland—System should not be used for approaches at minimums lower than standard range station approaches pending completion of glide path, marker and monitor facilities.

Columbus — CAA should improve flight characteristics of localizer.

Denver—Glide path went off the air for five minutes during flight tests; tower did not inform aircraft of failure although tower personnel were aware tests were under way.

Detroit (Willow Run)—Warning horn disconnected.

El Paso—Glide path excessively broad.

Erie, Pa.—High trees should be removed from near middle marker beacon.

Fort Worth—Glide path too broad; due regard should be given to the grain elevator obstruction on the glide path before bad weather approaches are attempted under lowered minimums.

Grand Junction, Colo.—Power regulation during periods of high consumption frequently brought the signal strength of glide path low enough to set off monitor; recommend CAA get independent power supply for ILS system or provide sufficient power to improve reliability.

Kansas City, Mo.—Glide path excessively broad.

Knoxville — Glide path wide excessively broad.

Las Vegas—Glide path difficulties similar to those found at Portland, Ore.

Minneapolis—Glide path excessively broad; localizer off runway center.

Nashville—Request CAA improve steadiness of localizer signal.

New York (LaGuardia)—Tower operators appeared too busy to notice monitor warning. Warning light was found on in the tower monitor with warning horn silent; when monitor reset system seemed to function normally; malfunction was caused by aircraft flying over localizer transmitter. Recommend specific responsibility for checking monitor be fixed among tower personnel.

Newark — Localizer bends between outer and middle markers; warning light bulb had been unscrewed and warning horn silenced making monitor ineffective; localizer balance indicator needle was bent touching the face of the instrument and making it unusable.

Oakland — Glide path excessively broad; suggest establishing outer radio beacon 7 miles from runway to serve as safe bracketing point in view of high terrain 10 miles out.

Portland, Ore. — In making level pass through glide path at 1,000 ft. normal course width was noted. However when needle approached center the warning flag appeared indicating absence of signal. Beyond center normal indication was resumed. second pass was made with similar results. An automatic approach was made and flag alarm indicated off any time the aircraft approached center of the course. Autopilot was unable to make a smooth descent although it held well within safe limits. Second automatic approach was made with similar results. There was a complete absence of signal at the correct glide path position but adequate fly up and fly down indications were given when the aircraft was above or below the glide path.

Reading, Pa.—This station not considered properly monitored for operational low approaches under actual instrument conditions. Recommend this ILS station not be used until satisfactory monitoring is provided.

San Antonio—Localizer is only unit that can be controlled from monitor. Recommend remote switching of glide path so it can be turned off at monitor when localizer fails.

Seattle-Tacoma—Glide path angle appears excessively high and shows evidence of washboarding. Main panel of monitor in control tower is sometimes unmanned although there are personnel on duty in tower at all times. Tower personnel do not have contact with aircraft except through tower at Boeing Field. Recommend system not be used until direct communications between tower and planes is established for immediate warning on ILS malfunctions.

St. Louis—Warning light in tower removed because light annoyed tower personnel. Middle marker not monitored because of lack of cable.

Tulsa—Glide path width excessively broad.

DOUGLAS SKYROCKET COMPLETED

Recent photo of completed Douglas D-558-2 Skyrocket reveals sleek lines and glaring white paint job. Tiny speedster will attack the sonic barrier with more power, better design and more advanced features than previous research aircraft. Cabin is refrigerated to accommodate high friction temperatures encountered near sonic speed. Rocket engines fire for two minutes, entire test flight has 30 min. maximum duration. Note open dive brake panel on aft fuselage. (Navy photo)

Weather, Static Figured in Crash

American Airlines Jones Beach landing reported by CAB 11 months after accident.

Failure of both American Airlines and U. S. Weather Bureau forecasts, saturation of navigational facilities in the New York-Washington area, severe precipitation static and the consequent inability of the pilot to land in a prepared landing area were blamed by the Civil Aeronautics Board for the emergency landing of an American Airlines DC-3 on Jones Beach, N. Y. on the night of last Jan. 5.

Cause of another crash on the same night of a nonscheduled passenger-carrying DC-3 at Millville, N. J. due to the same weather forecast failure and saturation of navigational facilities has not yet been determined by CAB.

▶ **Pilot Commended**—The American Airlines flight 203 piloted by Capt. John Booth, whom CAB commended for his judgment and skill, left La Guardia field at 5:34 P.M., bound for Nashville. It discharged passengers at Baltimore and was cleared under contact flight rules to Washington. At 7.34 P.M. Booth was east of the Capitol Building, had the field lights in sight and was No. 1 to land. Then his troubles began. The tower ordered him to hold east of Anacostia due to two emergencies declared by military aircraft with 30 minutes fuel flying under instrument conditions somewhere in the overcast.

Why the Washington tower refused to allow flight 203 to land when it was obvious that it was not interfering with the emergencies in the overcast or why the military aircraft were not turned over to GCA at Andrews Field, Md. was not indicated in the CAB report. Andrews Field GCA was able to observe flight 203 in its search radar scope.

▶ **Forecasts Sour**—While flight 203 was holding under contact conditions east of Anacostia, the weather closed in and it was forced into instrument flight conditions. Both the American Airlines and U. S. Weather Bureau forecasts for the east coast went sour due to the rapid convergence of a low pressure trough and a cold dry air mass which produced severe snow showers. The snow showers moved east and northward much more rapidly than anticipated resulting in rapid deterioration of the weather at east coast terminals.

Intense precipitation static made it impossible to use either low frequency radio transmission or for the aircraft to receive radio range signals at sufficiently long intervals to identify the range station. Both automatic and manual ADF failed.

Flight 203 was then shunted from Baltimore to Philadelphia by airways traffic control and prevented from landing at Baltimore due to more emergencies declared by other aircraft caught in the weather and at Philadelphia by inability to make an instrument let down on the radio range due to precipitation static. The CAB report indicates that the pilot was being given erroneous weather reports for Philadelphia and La Guardia indicating these terminals had fair weather when they were actually close to CAA minimums.

▶ **Wrong Impression**—Pilot Booth testified at public hearings that he was under the impression that in flying north he was getting out of the bad weather when actually snow storms had been travelling north faster than the DC-3.

Due to precipitation static all communications were via American Airlines VHF radio system. These communications continued to function until the aircraft began its emergency landing.

Finally at 9:28 flight 203 had only 70 gallons of fuel left and declared an emergency. Flight descended to 200 ft. without breaking into the clear. At 10:08 it landed wheels up on Jones Beach, less than 10 miles from where the flight originated five hours before. Aircraft suffered major damage; passengers minor injuries.

Pilot tried to use the La Guardia Field ILS system but found it useless in orienting himself. American Airlines altered the Floyd Bennett Navy GCA crew which operated on a 30 minute standby basis. AA did not sound the alarm in time to bring the Navy crew into action. Ground radio D/F stations failed to locate the aircraft until 37 minutes after it had landed.

CAB report says saturation of the airways, aggravated by seven emergencies at Washington, two at Baltimore, two at Philadelphia and seven at New York, would have been alleviated by diversion of military aircraft to nearby military airports having GCA. It does not specify why CAA airways traffic control failed to do this. GCA was available for military aircraft at Andrews Field, Patuxent, Floyd Bennett and Mitchel Field.

Meyers Probe

Federal Grand Jury investigation of criminal charges against Maj. Gen. Bennett E. Meyers, growing out of his testimony befor the Senate War Investigating Committee, got under way last week in Washington with the appearance of Mr. and Mrs. Bleriot Lamarre. Mildred Lamarre, characterized by Meyers as his wartime "girl friend", told the jury that the general dictated phony letters to her last July in an attempt to fortify a story then being concocted for his defense.

Lamarre revealed that he had put up $10,000 to start an investment business with Meyers to be known as "the aid company." He asked Meyers for his money back last September but to date has not received it and is filing suit to recover the amount.

Meanwhile, the Air Force reportedly had offered Maj. Gen. Junius W. Jones, air inspector, his choice of retirement or another post. Jones' testimony before the committee attempted to explain why his department didn't act promptly on an anonymous letter charging Meyers with irregularities.

New Transport Bills Hit House and Senate

Legislation to create a department of transportation headed by a secretary with cabinet rank has been introduced in both the Senate and House of Representatives, with early hearings expected.

Sponsored by Sen. Homer Capehart (R., Ind.) and Rep. Karl Stefan (R., Neb.), the bills would give the new department jurisdiction over CAA, CAB, the Interstate Commerce Commission, the Maritime Commission, the Weather Bureau, the Inland Waterways Corp. and the Office of Defense Transportation. Included in the department would be an under secretary of transportation and three assistant secretaries—one for air, one for the merchant marine, and one for railroads.

Rule making (including the prescription of regulations, rates, charges, standards and practices), adjudication, and the investigation functions of CAB, ICC and the Maritime Commission would be exercised by the three agencies independently of the secretary of transportation.

Duties of the secretary would include direction and supervision of the several agencies placed under him; establishment of general policies and programs for the department and its agencies; and coordination of activities of the various agencies in the department with a view to carrying out the national transportation policy declared by Congress in the Interstate Commerce Act as amended. The secretary would also make recommendations to any agencies in the department or to Congress for elimination of conflicting policies established by the agencies in exercising their independent functions.

Convairliner Given CAA Type Certificate

Consolidated Vultee's Convairliner transport received its CAA type certificate Nov. 28 after completing just short of 150 hours of accelerated test flying.

The "NC" registers CAA approval of the basic airplane, and specifically applies to the American Airlines plane used in testing flights. It does not permit commercial use of the AA plane's pressurization, cabin heating, and heat de-icing accessories.

Full certification of Convairliners will require additions to the basic NC, to cover the accessory items mentioned and the varying (as to accessories, power plants, and door locations) tailor-made designs ordered by different purchasers.

That Convair chose to push for certification of the basic aircraft structure in advance of what might be considered a complete NC makes sense in the light of the company's critical tax carryback situation. Without an NC the company could not show acceptance by customers and actual sales of the transport. Without a showing of actual sales Convair could not present a figure of factory losses on sales to apply to tax carryback refunds—which had to be declared prior to a Dec. 1 deadline for carryback application.

While the present certificate applies to American's airplane with the P & W R-2800-34 engine of 2100 hp. at takeoff, and performances with a takeoff gross weight maximum of 39,000 lb., considerable re-testing will be required for the company's planes to be powered with P & W R-2800-CA-18 engine delivering 2400 hp. at takeoff, with water injection, at an anticipated gross maximum of 39,500 lb.

AVIATION CALENDAR

Dec. 8-9. Meeting of participants in air Documents Index Plan, Wright Field.
Dec. 10-12. Government-industry meeting on AN9500 series specifications, New York City.
Dec. 17. Annual Wright Brothers Lecture, U. S. Chamber of Commerce Building, Washington.
Jan. 7. Florida Flying Alligator Club international meeting, Melbourne, Fla.
Jan. 7-30. Air Transportation Institute, American University, Washington, D. C.
Jan. 9-11. All-American air maneuvers, Miami.
Jan. 13. ICAO statistics division, Montreal.
Jan. 15-18. Southeastern soaring contest, Sanford, Florida.
Jan. 26-28. CAA non-scheduled operators of region four, Fort Worth.
Mar. 8. ICAO maps and charts division, Brussels.
Mar. 22. ICAO aeronautical maps and charts division, Brussels.
Mar. 26. National Flight Propulsion meeting, Institute of the Aeronautical Sciences, Hotel Carter, Cleveland.
Apr. 4-8. American Association of Airport Executives, Congress Hotel, Chicago.
June. Second ICAO assembly meeting, western Europe.

INDUSTRY OBSERVER

► **In addition to ramjet helicopter research contract with McDonnell Aircraft Corp. (AVIATION WEEK, Nov. 24), Air Force has jet helicopter research contracts with General Electric Co. Autogiro Company of America, Inc., and Marquardt Aircraft Co.**

► Navy Bureau of Aeronautics is pressing research on a bodine jet engine, which derives its gases from a free-piston reciprocating engine. High pressure ratios badly needed for jet engine development, are possible with this machine.

► **Britain's first jet-powered flying wing, the Armstrong Whitworth A.W. 52, made its first test flight last month, three weeks after the Northrop YB-49 jet flying wing flew. Latest version of the A.W. 52 utilizes boundary layer control and is powered by two Rolls-Royce Nene turbojet engines.**

► Flight test determination of the maximum cargo carrying ability of the DC-4 at high-altitude airports, initiated at the 13,000 ft. airport of La Paz, Bolivia, one month ago, was interrupted by DC-6 groundings. Pan American Grace, which had transferred much of its passenger service to the DC-6, was forced in the emergency to restore to passenger use the DC-4's assigned to the cargo tests. Purpose of the tests, with Douglas Aircraft Co. engineers participating, was to obtain confirmation of high altitude landing and takeoff performances under cargo conditions, previously given a theoretical evaluation from high-altitude in-flight performances recorded by the manufacturer.

► **Lockheed's second Constitution, a "full dress" edition that is expected to be placed in Pacific service by Naval Air Transport Service, is expected to be test flown during the first week in January. The 184,000 lb. gross transport should show a pay load performance of from 40,000 to 45,000 lb. Top deck of the transport has been equipped with a plush interior of NATS blue decor and seats for 92. The transport's lower deck offers 7,500 cu. ft. of cargo space and a floor structure equipped for quick installation of either litters or web-type troop seats. Setting of a definite date when the No. 2 Constitution will begin trans-Pacific flights has not been attempted, and will depend largely upon time required for completion of engineering flight tests now under way by Lockheed, and NATS' acceptance tests, which will follow at Patuxent.**

► Continued experiments with the 68-lb. Allison scope radar mounted in the nose of a DC-3 have indicated to Southwest Airways the need of either a visual or aural signal linked with anti-collision ranges of the equipment. Pilots report that in low-level feeder airlines operations the terrain reflections illuminate the scope to a degree of brilliance that obscures the small pip of an approaching or overtaking aircraft.

► **Extension of Ryan Aeronautical Co.'s year-old guided missile research program has been assured by U.S. Air Force allocation of $1,070,000 to a Ryan commitment described only as "already substantial". The Ryan program covers design, development, and manufacture of an undescribed missile, units of which are under flight test at Alamogordo Air Base, New Mexico.**

► Harry B. Woodhead, president of Consolidated Vultee, says the company will carry on its Convairliner project. Of Convair's $360,000,000 valuation of unfilled orders, as of Oct. 31, Convairliner orders account for approximately $44,000,000. Company has been advised by its marketing analysts that existing and undeveloped domestic and world markets should enable the company to attain a "break-even" sale of 300 transports. It now holds orders for 178. Current losses on the project are expected to continue through 1948, and pending their reduction by collections on delivered planes extensive use will be made of the company's $25,000,000 of unsecured bank credit extended by a group of banks headed by Chase National. It is expected that in securing working capital for advancement of the Convairliner program the company may borrow up to $20,000,000 on this credit.

► **Martin AM-1 Mauler can carry three standard Navy aerial torpedoes, a total external load of well over three tons, heaviest weapons load ever carried by a single-seat airplane.**

► Marine Corps is interested in McDonnell XJHH-1 twin-engine helicopter as a close-support landing craft for beachhead duty.

Dutch Air Monopoly To Be Studied

Constant pressure from Holland's major steamship companies and other private interests, has resulted in the Netherlands Ministry of Transport promising to undertake immediate study of the possibilities of allowing other airlines to operate in competition with the government-sponsored monopoly KLM, the Royal Dutch Airlines.

J. W. Bacher, director general of civil aviation, revealed (to this correspondent) that the decision may soon be made public, and admitted there is at least "a chance" that the government may reverse its long-standing policy of protecting KLM against competition.

At the same time he reiterated his personal opinion that the country is not "big enough" to support more than one large airline, and pointed out that KLM has a personnel already of 10,000 and operates a fleet of more than 80 planes.

Dutch shipping has put forth much the same line of argument as have the steamship lines in the United States relative to the operation of scheduled passenger and freight air service along with their surface ships. They maintain the airplane is a complement to the ocean-going vessel and that the use of the two together is necessary for efficient and profitable operation of a large shipping company.

Leaders in this fight for establishment of new air services are the Netherlands, Holland America, and Rotterdam Lloyd steamship companies. Opening wedge was made some time ago by the Netherlands company when it saw to the establishment of the British Netherlands Air Services, with headquarters in London. In effect this is a separate company, but the interlocking with the steamship line is realized through the presence on its board of directors of a director of the ship company.

Using two small Miles Aerovans, the company shuttled freight between England and Holland and other European countries. Two weeks ago, unfortunately, both planes were damaged beyond repair in emergency landings at Alderney, in the Channel Islands. Other planes are being temporarily chartered in England to take their place.

More of a potential threat to KLM than this "shadow" company, however, are plans now being worked out between the Netherlands line and the famous Fritz Diepen, who owns and

Bombay Letter:

India Not Behind In Air Travel

BOMBAY, India – "Backward India" has been a cliche for a long time. Her air transport industry is a striking exception, however.

Here you'll find equipment that looks and flies like America's; passenger-handling techniques that are extremely generous; comfort and safety.

You'll fly in C-47 conversions for the most part from concrete-paved wartime-built airfields. Pilot and co-pilot are usually former military pilots. The plane carries a radio operator. And there's a stewardess who looks, acts (and often chews gum) and talks much like the girls in America.

There's free transportation in an airline bus both to and from the airport. You'll get free meals, but they'll be served on the ground at way stations, and coffee, tea, etc., in the air.

In the air there are some differences. You can't smoke in these conversions for inflammable materials have been used. You'll be flying around 10,000 ft., in the dry season to get up out of the heat and disturbed air and in the monsoon season to clear the clouds.

Landings and take-offs will startle you a bit, if you're used to boring up out of LaGuardia. The word in India is long, low and smooth. Taking off you'll fly straight out at about 50 feet until single engine speed is built up. Landing, you'll come floating in from several miles out, probably doing the last half-mile at about 150 feet.

Several reasons make this procedure advisable and possible. First, Indian airports were constructed for military purposes so they are far from the cities and have clear approaches; second, orders are to spare engine and airframe all unnecessary stress and strain; last, the matter of instilling confidence in persons new to air travel has brought the "slow and easy" technique into favor.

* * *

It's interesting to note the respect with which the Indian airlines are generally held. Reason is that they are dispensing a commodity which is generally unknown in Indian transportation—A-1 service coated with courtesy.

Contrast with the railroads is almost unbelievable. The Indian "iron horse" is still staggering from war's effects. Accommodations are extremely poor, dirt and crowding are universal and timetables are often almost non-existent.

Rail schedules call for a 26-hour run to Delhi from Bombay. You can fly in 5 hours with Air-India. Train trip to Hyderabad takes 20 hours. Deccan Airways will get you there in three. From Calcutta to Madras the train chugs along for 42 hours. Airways India takes you down the coast in five.

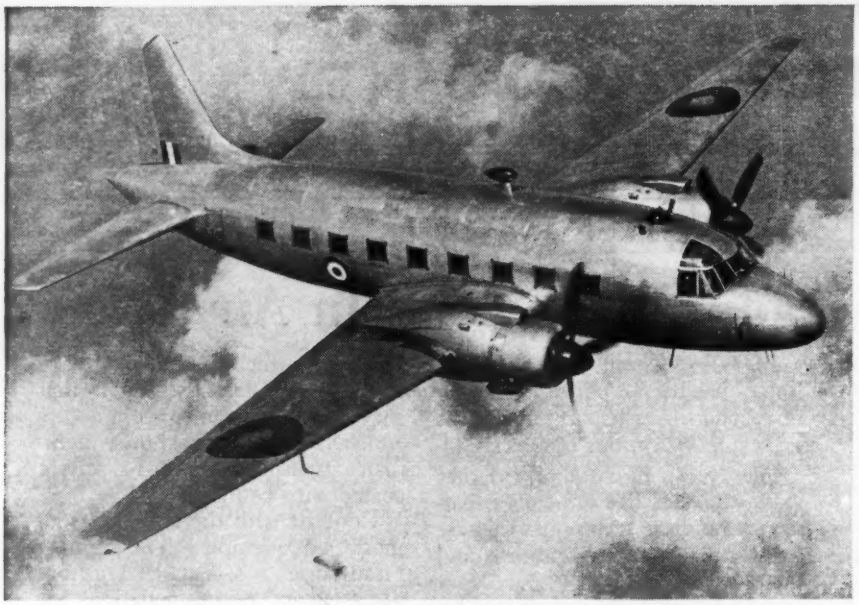
* * *

Most important controlling factor in any Indian air transport expansion is the lack of trained personnel. Air-India has led the field in sticking to Indian pilots. Many of the others have had to take on British, American, Australian and other nationalities.

They are offering $270 a month base pay and $3 an hour flight pay, and beating the bushes for material. In India and Pakistan together there were only 230 commercial ticket-holders as of mid-year. Spread that total among ten scheduled air lines (and allow for a few pilots-in-waiting to maharajahs) and you can see there just aren't enough to go around.

Chances are that India soon will undertake a broad training program to supplant her present system of subsidized flying clubs. These are waxing fat on generous government payments, amassing a goodly flying time (11,000 hours the first half of the year by seven clubs), but not feeding many pilots into the industry.

They are a carry-over from what might be called "aviation country clubs." And in the new India air transport picture, their days appear numbered. **–Joseph Van Denburg**



NEW VIKING VERSION FOR RAF

LONDON—Delivery by Vickers-Armstrongs of their "Valetta" (above), new military version of the "Viking," to replace the DC-3s now in use by the RAF is expected by 1948. Valetta has more powerful Hercules 230 engines of 2,000 hp. each, a larger entrance door to permit small vehicles to be loaded into the cabin, and an enlarged cockpit permitting a navigator to be carried in addition to pilot, copilot and radio operator. Main roles: troop transport, paratroop carrier, supply dropper, glider tug, freight and vehicle carrier, hospital plane. As troop transport, the Valetta will carry 36 fully armed infantrymen.

operates the Ypenburg airport, just outside of The Hague.

Diepen is already licensed to operate a charter service, and since the war has acquired a fleet of 25 planes of his own, which he operates both inside and out of the Netherlands. His newest ships are surplus twin-engined Beechcraft and Cessnas, which he has converted along luxurious lines, and his oldest, single engine Fokker Kollhovens.

The steamship company will give Diepen a substantial amount of capital and he will furnish the planes, both for freight and passenger service, and to realms as distant, it is hoped, as Java. At the moment Diepen is not licensed to operate planes larger than the Cessnas and Beechcraft, and the government is also being petitioned to increase his license limits.

Diepen, incidentally, is the fabulous young man (about 38) of Dutch aviation who successfully built a flyable airplane under the noses of the German occupation army. The plane was the rough prototype of the new private four-place ship the "Promoter", being produced now by the Fokker plant at Amsterdam.

His airport was both wrecked and dismantled by the Germans, but Diepen managed to steal enough materials and instruments from crashed planes to construct his new plane at his home. He used a Ford V-8 engine for power.

Diepen is very highly regarded in all impartial Netherlands aviation circles and is considered the one man in the country who is capable of ultimately giving KLM competition. In the space of a mere two years, and in spite of fearful shortages of material and labor, Diepen not only got his charter service (the only one in Holland) going but rebuilt his airport out of a waste of rubble and twisted girders.

Obviously, Diepen does not hold with the school of thought that Holland can support only one line. He sees an analogy between Dutch planes of today and the sailing ships of old. He believes that all the competitive latitude possible should be afforded the modern merchantmen of the air to foster Holland's trade with the world.

Other possibilities have been suggested in preliminary discussions between the shipping companies and the government. One is that the companies turn over so much of their stock to KLM (which actually is a privately operated company, with the government owning a majority of the stock) and have KLM operate aircraft for them. A spokesman for the Netherlands line indicated that this might be acceptable as a stopgap measure, but not a solution.

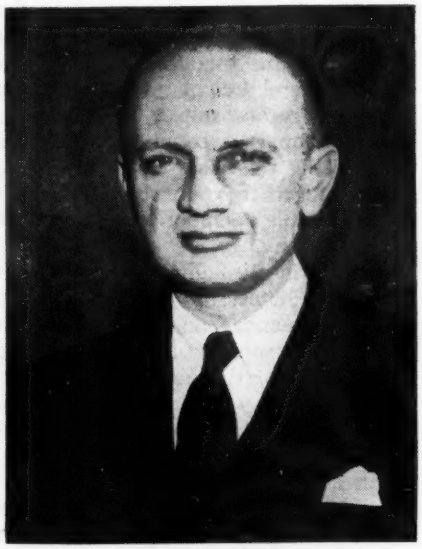
The amazing growth of KLM since the end of the war and its present prosperous state undoubtedly is the main factor which has caused jealous looks in its direction. Its planes and its hangars and equipment at Schiphol Airport, Amsterdam, decimated almost to the point of obliteration by the war, KLM has made a comeback to the extent where it is doing a $40,000,000 yearly business and is paying dividends to shareholders.

It is building hangars and repair shops at Schiphol (thanks, of course, to government priorities) are at least as good as any at any airport the world over. Headquarters is a huge modern office building in the suburban Wittenbruck section of The Hague which will house nearly 3,000 employes when completed. Something of an empire in itself, KLM offers a wide variety of special services and benefits for its personnel, including even a KLM symphony orchestra.

The line uses only American planes, and is modernizing its fleet nearly every week with the arrival of new Constellations. A number of DC-6's also are on order. Because of the scarcity of Dutch pilots, more than half of KLM's pilot staff of 290 are from other countries, including 23 Americans.

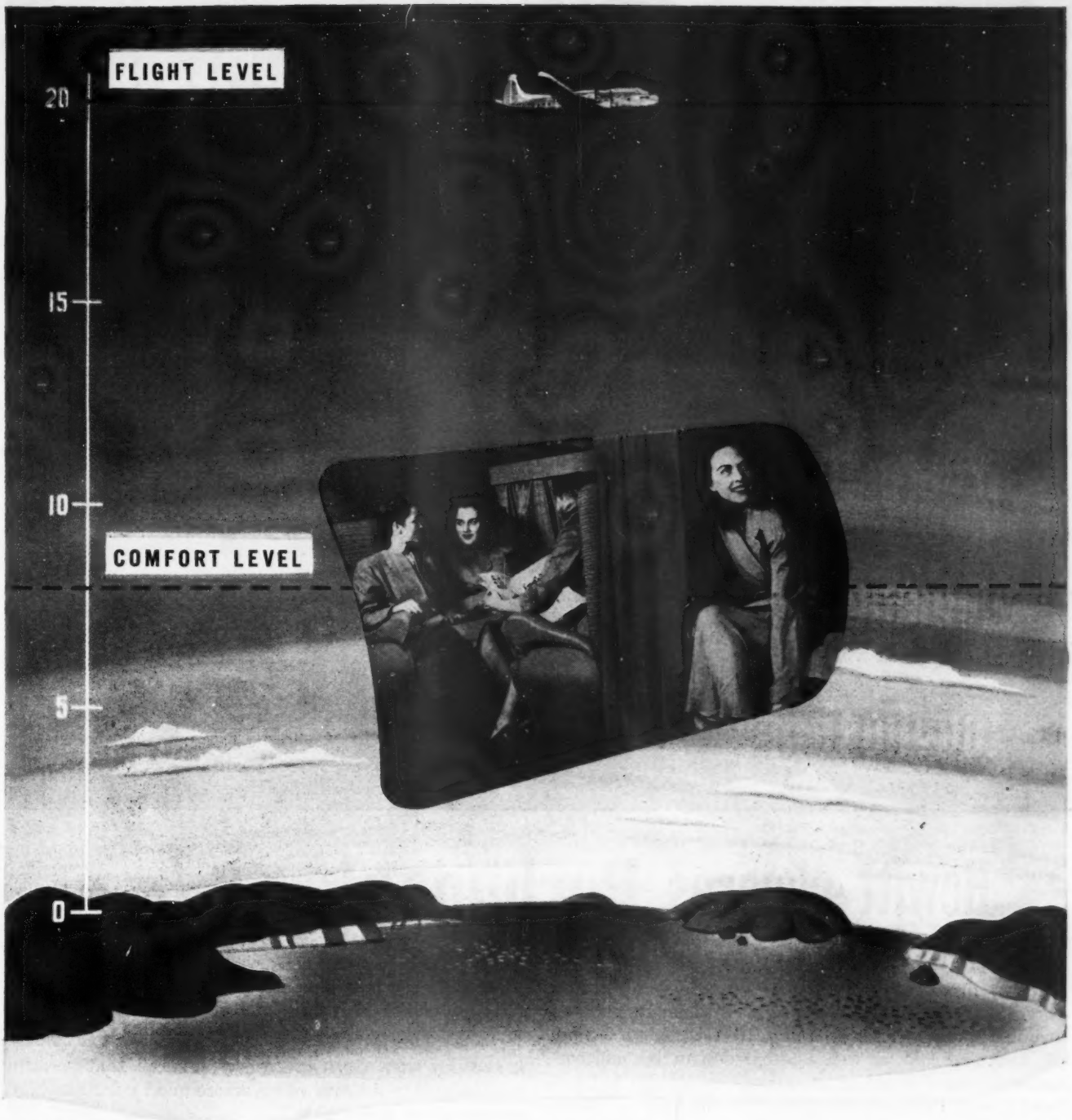
Airmail Rates Cut

MELBOURNE—Airmail fees from Australia to the Netherlands East Indies, Malaya, North Borneo, Burma, Ceylon, French Indo-China, Hongkong, India, Siam, China, Formosa and Manchuria have been reduced 30 to 60 percent.



COUNCIL HEAD

Election of Gilbert Perier (above), managing director of Sabena Belgian Airlines, as president of the carrier's Administrative Council was announced recently. Perier, who retains his managing director duties for the present, was selected at a Brussels meeting. Four of the Council's twelve members are nominated by the Government, eight by private interests. Perier is delegated by SNETA, the national air transport development company. He succeeds as council president Firmin Van Bree, and was elected to the new post while attending the Rio meeting of the International Air Transport Association, which chose him as president of the 1948 IATA general assembly in Brussels.



PASSENGER COMFORT in the new Douglas DC-6 high altitude transport is closely guarded by Kollsman designed and engineered Cabin Pressurization Controls. Years of Kollsman experience in the detection of small pressure differentials and harnessing them to actuating mechanisms have accounted for much progress in fitting the airplane to public transportation needs.

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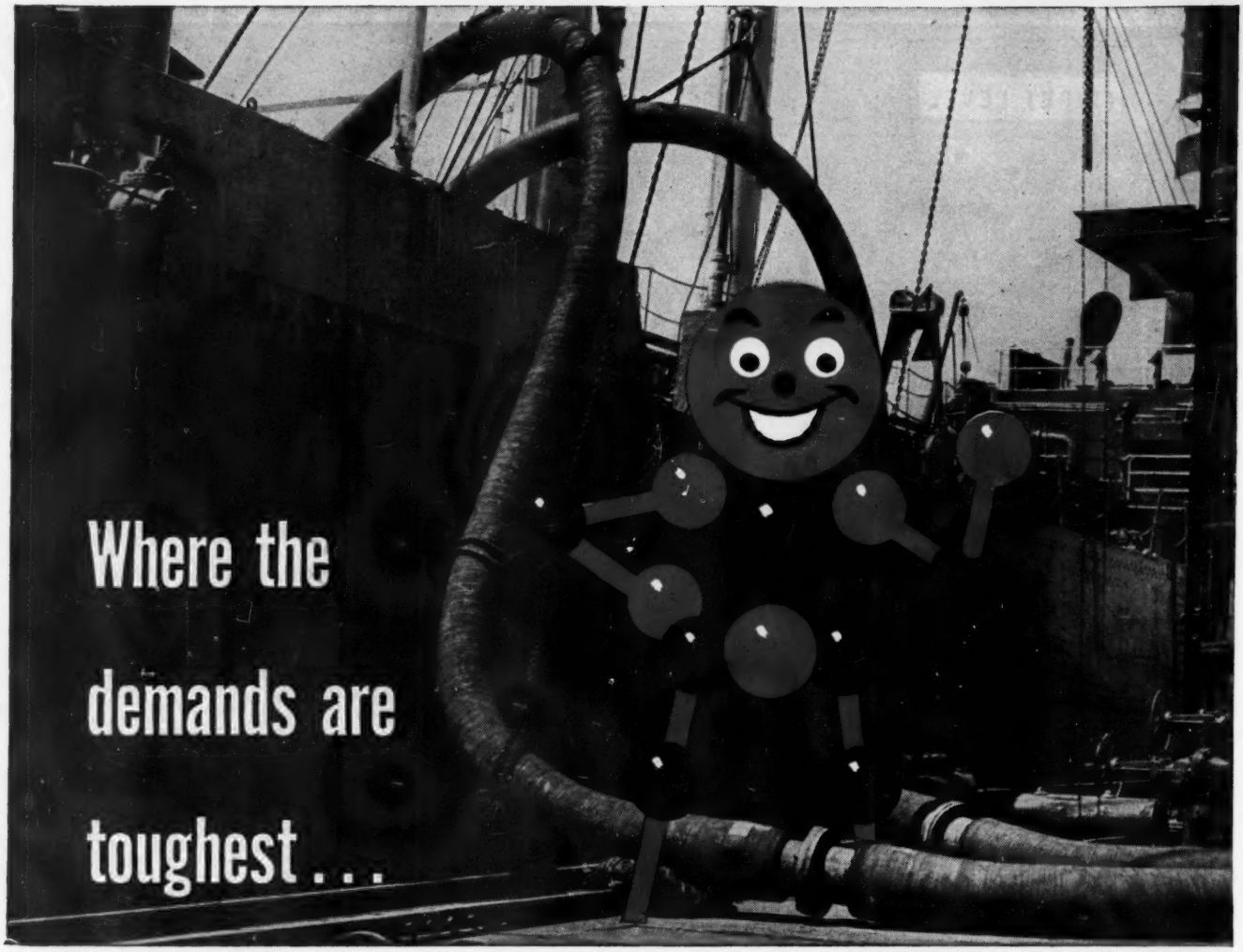

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Australian Production At Absolute Minimum

MELBOURNE, Australia—Rate of production in Australian government aircraft plants is being held to the absolute minimum consistent with the necessity of meeting replacement demand in the Royal Australian Air Force and of maintaining a readily expandible nucleus of manufacturing capacity.

Except for the projected replacement of Pratt & Whitney engines in the Vampire fighter by Australian-built Rolls Royce Nene turbo jets, the RAAF will for years to come rely largely on what is left over from World War II production stockpiles. One thousand three hundred and thirty planes are held in storage to serve as immediate reserves to take care of requirements between July 1948 and June 1952.

Between May, 1946, and October, 1947, only 19 new Lincoln bombers came off the production line, an average of one a month.

▶ **Civilian Prototype**—Since General Motors' Australian subsidiary called off the Gipsy Major engine production program, no private maker remains in engine production. De Havilland's Sydney branch plant provides the only setup for civilian plane assembly. In addition to assembly work on the Vampire fighter, for which the Commonwealth Aircraft Corporation is tooling up to produce the Nene turbo jets, de Havilland is getting the first Australian-designed civilian prototype into shape for assembly.

Designed to replace the Dragon, which has done a good job developing feederlines in Australia's "outback," the new craft will be known as the Drover and structurally will follow the well-established principles of the de Havilland Dove.

The three Gipsy Major 10's of 140 hp. which will power the Drover will be imported from England although it was first planned to use up the large stockpile of Gipsies which General Motors built in Australia during the war.

▶ **Tudor Project**—A government production plan known as the Tudor project is still in its incipient stages. It is a developmental project largely linked with design improvements in Great Britain. However, it is unlikely that anything but the military version of the Tudor will go into production in Australia.

Apart from limited development and design activities carried on in Australia, foreign blueprints and manufacturing data dominate production. An about equal share of "know-how" is contributed by the United Kingdom and the United States.

Imports of American planes and spare parts, and even of production tools, are likely to continue falling behind requirements unless the dollar situation eases up considerably. Continued lag in British production has discouraged Australian airlines from placing orders in Great Britain.

DOVE ON FLOATS

De Havilland Aircraft's eight-place feeder liner has been redesigned by the Canadian affiliate as a float plane in an effort to increase its utility in bush operations which constitute the greatest airplane market in the Dominion. Project was carried out at the de Havilland plant in Toronto which also produced the floats.

Leonard Elected President of PAC

Pacific Airmotive Corp. has named W. O. Leonard president to succeed Earl Herring who resigned Nov. 7 for personal reasons. Leonard is a graduate of Cornell University with a degree in Mechanical Engineering. He was President and General Manager of the Wilson Foundry and Machine Corp. from 1938 until he was appointed vice president of PAC's Pacific Division in July 1947. Herring is retaining his large financial interest in PAC.

In other personnel actions

● **Menasco Manufacturing Co.** of Burbank, Cal. elected Henry P. Nelson of Washington, D. C., president. Nelson was formerly head of the WPB Aircraft Division. He has been executive vice president of Menasco since August 15, and earlier was the company's eastern manager.

● **Hydraulic Press Manufacturing Co.** elected Walter G. Tucker, chairman of the board. The action returns Tucker to the responsibilities which he held from 1933 to 1945, following 17 years as president of the company. Paul C. Pocock, will assume active direction of the company's operations as executive vice president and general manager. Warren R. Tucker was elected to fill the newly created post of vice president in charge of engineering and research.

● **Eltron, Inc.** elected Peter F. Hurst, president and director. Hurst was formerly executive vice president and general manager of Aeroquip Corp.

● **Monsanto Chemical Co.** appointed Edmund Greene as sales and promotion and advertising manager of the Merrimac Division. Green worked for eight years in the firm of Rohm & Haas, Philadelphia as sales promotion manager of the plastics division.

● **Thompson Products, Inc.** appointed A. L. Pomeroy, staff engineer. Pomeroy comes from Ranger Aircraft Engines, where he was manager of engineering operations. Prior to that he was associated with the research and development department of the Atlantic Refining Co.

● **Foote Bros. Gear and Machine Corp.** advanced R. B. Moir to assistant vice president in charge of engineering and product development of the Industrial Gear Division. B. H. Quackenbush will assume responsibility of sales manager.

● **B. F. Goodrich Co.** has named William W. Scull general manager of manufacturing services. Scull had been production manager of plants of the B. F. Goodrich Chemical Co., Cleveland, for the last two years.

● **Fairchild Engine & Airplane Corp.** appointed Walton B. St. John sales manager of the Personal Planes Division. Formerly St. John was general sales manager of Piper Aircraft Corp. Roscoe I. Markey has joined the company to assume charge of a technical division of the engineering department. Markey was formerly associated with the Poliak Mfg. Co. of Arlington, N. J. as chief development engineer.

● **Westinghouse Electric Corp.** appointed W. G. Miller assistant Works Manager. Miller has been manager of the headquarters manufacturing staff in Pittsburgh, Pa. since January 1946. From 1941 to 1945 he was methods engineer and staff supervisor in the Canton, O., Ordnance Plant.

● **Wagner Electric Corp.** appointed M. E. Comstock manager of its Electrical Division branch office. Comstock has been with the company since 1919.

● **General Electric** appointed T. Norman Willcox manager of the Methods and Equipment Laboratory of the Plastics Division. He has been section manager of the Laboratory since last February. He came to the company as a student in 1936. Douglas P.

Waterhouse has been named northeastern district representative for accessory equipment. Abe Martin, L. H. Means, E. S. McKay, and D. J. Sullivan have been appointed assistants to the manager of Employee and Community relations in the Electrical Apparatus Division.

● **Boeing Aircraft Co.** appointed Robert L. Regan factory general superintendent. Regan will direct manufacturing in the Company's Seattle fabrication, sub-assembly, final assembly and tool fabrication divisions. He began working for Boeing in 1928.

● **Lockheed Aircraft Corp.** appointed John Guenther as eastern public relations manager to succeed Paul L. Bradley who resigned to become vice president of John B. Walker and Associates. Guenther formerly was an editor of Newsweek magazine.

● **Timken Roller Bearing Co.** transferred William E. Bryden, sales engineer to the Cincinnati office of the Timken Steel and Tube Division. Bryden joined the organization in 1937. He will be succeeded in Chicago by William T. Strickland, sales engineer.

● **Sherrill Instrument Co.** named Claude Petella sales manager. He will have offices at the main manufacturing plant in Peru, Indiana.

● **ARO Air Tools** appointed Robert Swayze division manager in Texas; Herbert Freeman, and Merle Millor, Jr. to sales force; Ed. E. Allen as assistant in Cleveland territory; H. H. Higgins as Division manager in Montreal territory; Vernon C. Lief to the Los Angeles Office under L. W. Lisle.

● **Curtiss-Wright** announces retirement of Charles E. Hathorn, patent engineer with the corporation since 1932. Hathorn began his career with Curtiss-Wright in December 1918.

Navy Reveals Design Analysis System

Navy Bureau of Aeronautics has revealed an analytical system of applied aircraft design research which saves considerable time in the initial stages of new aircraft design and insures concentration of research and development programs in comparatively narrow and most fruitful fields, allowing large economies.

Developed by Ivan H. Driggs, Buaer aerodynamicist, the new system consists of a series of tables and charts illustrating the effect of variations in power plant, electronic equipment, armament and airframe design on a given type of aircraft. Already in use, the system:

- Narrows the field of possible solutions of any problem to a relatively few specific design studies allowing a proper choice after more detailed analysis.
- Singles out the most promising type of aircraft to develop at any one time and the compromises necessary to reach the desired end, predicting the future effect that it is to be expected from any course of action;
- Suggests the component development programs necessary either to reach a solution to any task or to continue development, indicating gaps in the present state of the art and placing proper relative emphasis upon any development, since each factor is considered as to its true relative importance;
- Points out complete aircraft development possibilities not only for a short range interim period but also on a longer range basis as dependent upon future development of the controlling factors, recommending types and sizes of the various components that will be required for any plan either on an interim or long range schedule;
- Provides officers charged with operational planning a means for determining future aircraft possibilities and therefore in the specification of needed types.

BRIEFING PRODUCTION NEWS

► **United Aircraft Corp.** shipments for the first nine months of the year totaled $144,084,728, leaving a Sept. 30 backlog of $275,000,000, down about $50,000,000 from June 30. Sales in the quarter ended Sept. 30 were $44,998,563.

► **Ryan Aeronautical Co.** has received a new $1,070,000 contract from the Air Force for production of a controlled missile it has designed and is developing. This is the third increase in the company's contract for this project.

► **Aircraft Screw Products Co.** is changing its name to Heli-Coil Corp. effective Jan. 1, 1948 due to increased application of its products in non-aviation industries. Address remains Long Island City, N. Y.

► **Edo Corp.** (formerly Edo Aircraft Corp.) delivery of floats in first nine months of 1947 nearly doubled output of similar period of 1946—632 sets this year against 338 sets last year. The nine months' production this year exceeded production for the full year 1946.

► **Aviation Maintenance Corp.** completed overhaul or modification of 25 aircraft in October, most of which were four-engine types. Company claims this is a new record for maintenance organizations. During the month major overhaul was finished on 17 C-54s, conversion completed on two C-54s and two AT-11's, and minor modification performed on two new Constellations, and tank-stripping and sealing on a third. Allison radar equipment was installed on a DC-3.

► **Pratt & Whitney Aircraft** division of United Aircraft Corp. plans to complete prototype of its new Twin Wasp R-2180 1800 hp. engine by the Fall of 1948, with production engine expected by January 1949.

► **Cub Aircraft Corp.**, Hamilton, Ont., will make small washing machines, in addition to continuing production of aircraft, in an effort more fully to utilize the plant's capacity. Metal venetian blinds are also being made.

► **Allis-Chalmers Manufacturing Co.** has launched a drive to add 1,540 new employees and increase the night shifts to record peacetime highs.

► **Aerojet Engineering Corp.**, in a joint venture with Ralph M. Parsons Co., Los Angeles, has signed a contract with the Navy for design and construction of rocket test facilities. The combine seeks to obtain additional business of that nature from the Army as well as the Navy.

► **Bendix Aviation Corp.'s** Eclipse-Pioneer division has consolidated sales and service facilities on the west coast, at the company's new building in Burbank, Calif. Combined facilities will be directed by E. O. Cooper.

► **Pacific Airmotive Corp.** has announced the opening of the west coast's largest service facility for executive and private aircraft owners, adjacent to the company's new Burbank, Calif. plant. All aircraft services will be available.

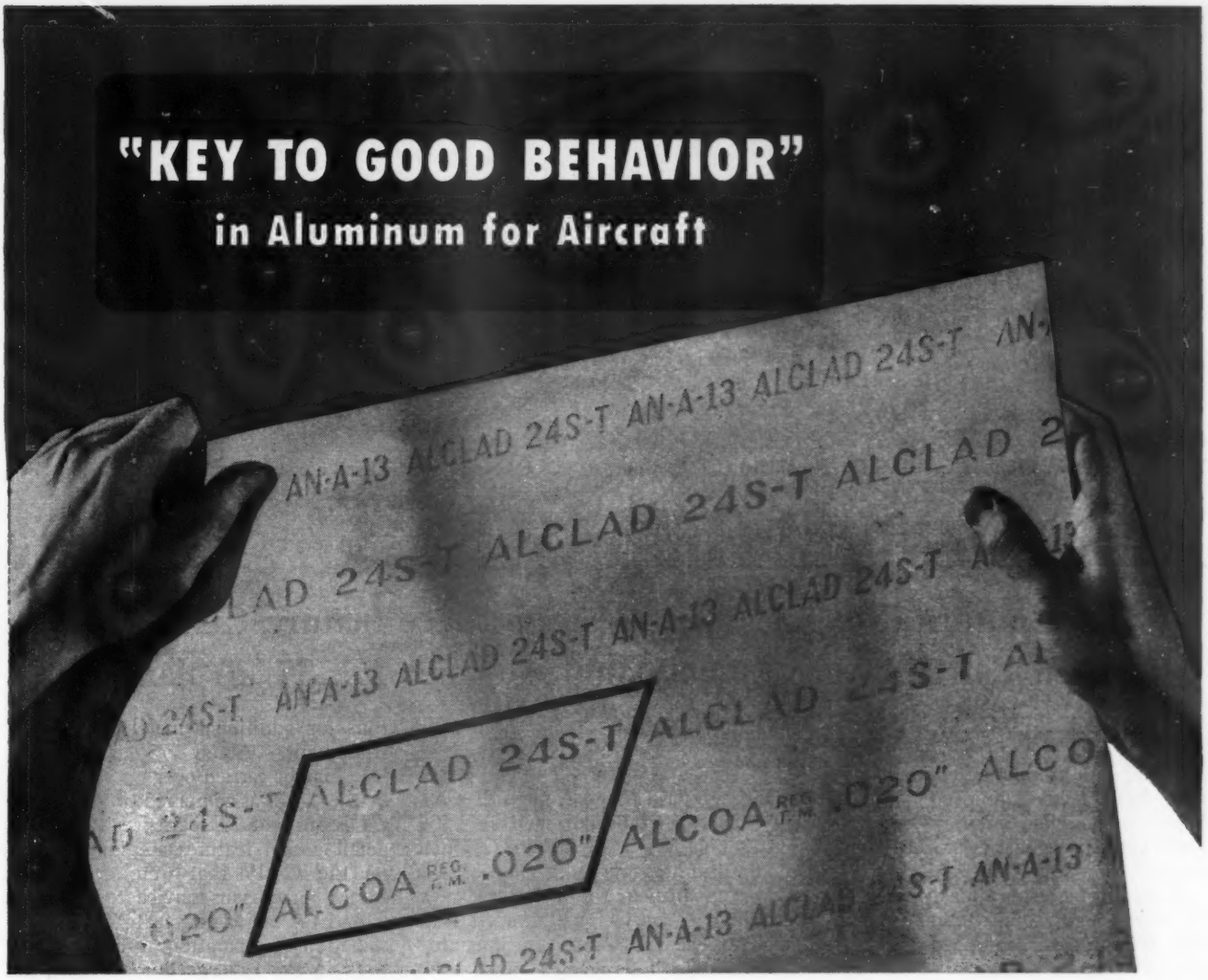
► **Airwork Corp.**, Millville, N. J., recently appointed a Pratt and Whitney distributor, announces the opening of an aircraft accessory overhaul shop. Shop will specialize in overhaul of Bendix-Scintilla and American Bosch magnetos and Bendix-Stromberg carburetors for Pratt and Whitney and Wright engines.

► **Timken Roller Bearing Co.** has purchased the eight-acre site and taken over all construction on the new $150,000 rock bit plant at Colorado Springs, Colo.

► **Sperry Products, Inc.** will move its manufacturing plant and general offices from Hoboken, N. J., to Danbury, Conn., during the summer of 1948.

► **Cleveland Penumatic Tool Co.**, manufacturers of aircraft landing gear shock struts, has a backlog at present of over $14,000,000. Company recently distributed a $150,000 bonus to its employees.

► **Fairchild Engine and Airplane Corp.'s** NEPA division will conduct a symposium on the subject of heat transfer, Dec. 8-13. Officials of the NEPA project as well as several hundred university experts are expected to attend.



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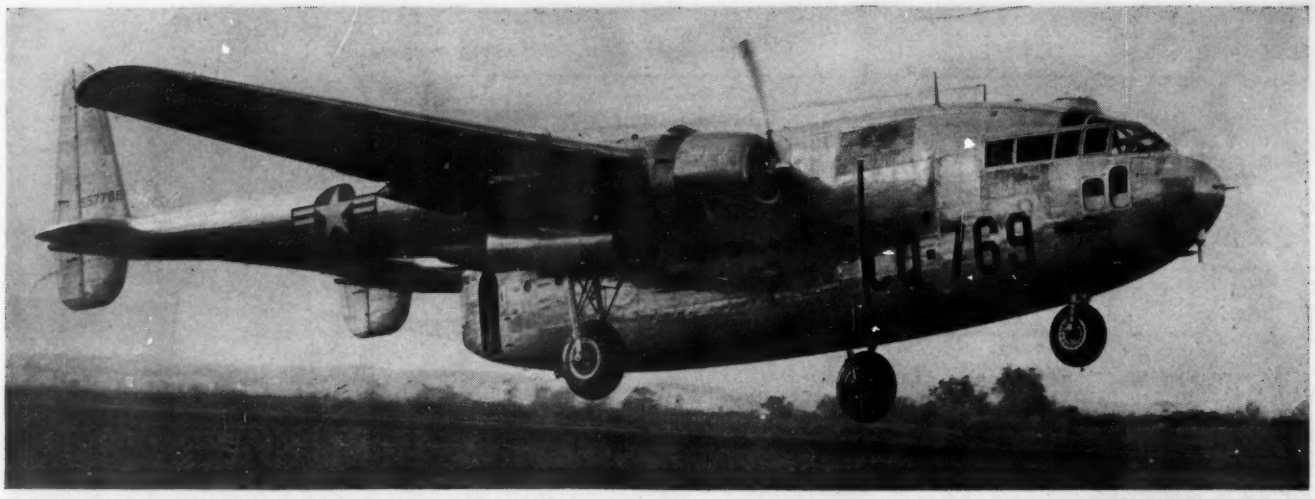


Takeoff of the first Fairchild C-119 Packet, a modified C-82A. Compare forward fuselage section and nose with conventional C-82 (below).

New Design Brings Better Packet

More powerful engines, larger cargo space feature C-119 for which Fairchild has $22,000,000 contract for 37 airplanes.

By ROBERT McLARREN

Award of a production contract for a new and greatly improved Fairchild Packet is tangible proof of the Air Force's extensive plans for the "flying boxcar" type aircraft.

Plans are maturing quickly for a detachable cargo compartment version, and a tractor-gear equipped Packet is now undergoing preliminary tests. The Packet faces a brilliant future not only in the Air Force but with the Ground Forces, the Medical Corps and, perhaps, commercial freight carriers as well.

▶ **New Order**—Latest version of the Packet is the Fairchild C-119 for which the Air Force has just awarded a contract for 37 at a total cost of $22,000,000. The new Packet is bigger, faster and more powerful than its predecessor, the C-82A, and corrects some of the minor deficiencies of that design revealed by the rigorous development program to which it has been submitted.

The C-119 is powered by two Pratt & Whitney Wasp Major engines developing 3,250 hp. each, replacing the 2,100 hp. Double Wasps of the C-82. Chief modification is the relocation of the crew compartment forward in the nose affording a considerable improvement in view over the former position atop the fuselage. This change has also increased the cargo capacity from 2,916 cu. ft. to 3,095 cu. ft. by providing an unobstructed cabin 8 ft. high, 9 ft. wide and 38 ft. long.

The 55% additional power has added more than four tons to the useful load of the Packet and increased its cruising speed from 214 to 231 mph. at 10,000 ft. Redesign of the wing to higher load factors has permitted an increase of 10 tons in its maximum takeoff loaded weight, less than two tons of which went into empty weight, leaving four tons for additional fuel and installed equipment. About 75% additional load may be carried over the same range by the C-119 as compared to the C-82A.

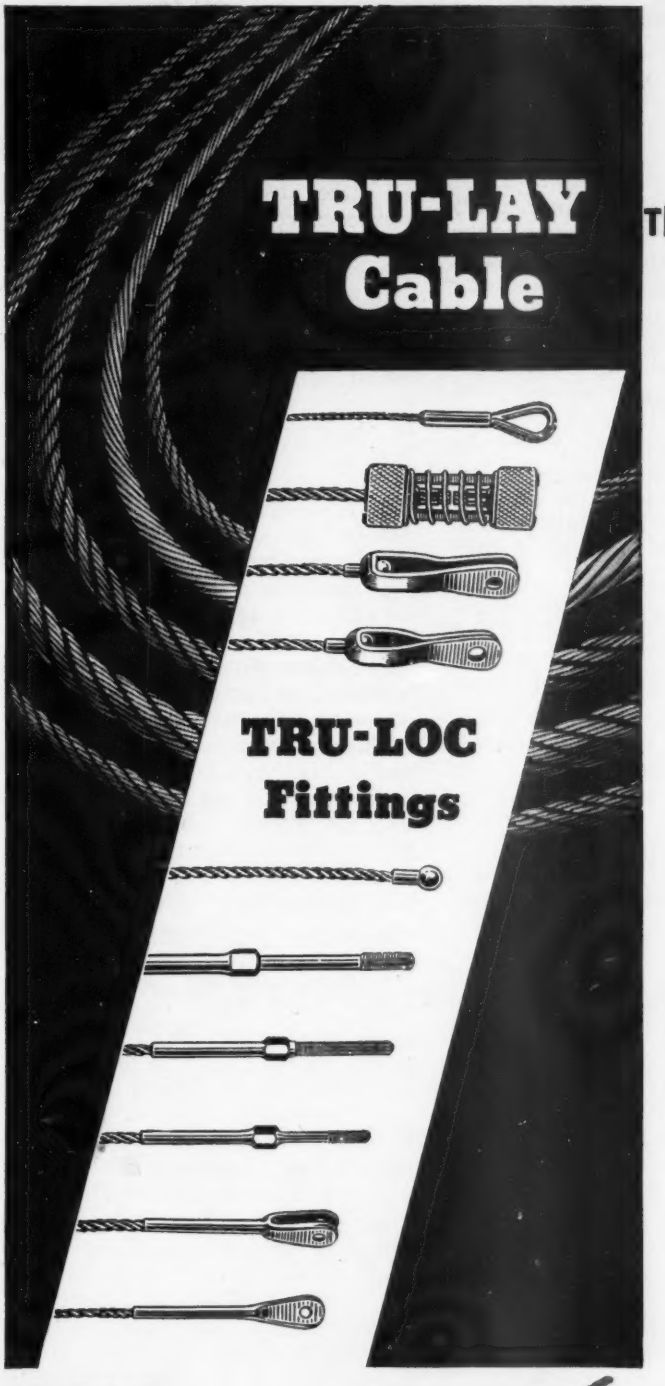
▶ **Lessons of Experience**—Numerous detail design features are incorporated on the C-119 that were determined from the rigorous service tests of the C-82A. A major new feature is the installation of a paratroop drop door forward in the fuselage floor, leaving the tail doors free to handle heavy equipment.

These clam-shell doors have also been improved through the addition of a bottom clam-shell portion permitting clear egress from the cabin without the projection of the doors out into the slipstream or their complete removal, as is done on the present C-82A. Radar equipment has been moved from the forward portion of the cabin to the aft door compartment, clearing additional space for cargo.

Standard C-82A Packet, readily distinguished from the C-119 (above) by the redesigned nose. Other points of difference are shown in box at right.

Fairchild Packet	C-119B Two P&W R-4360-20	C-82A Two P&W R-2800-85
Takeoff Power	3250 hp.	2100 hp.
Span	106 ft. 6 in.	106 ft. 6 in.
Length	85 ft. 10 in.	77 ft. 1 in.
Height	26 ft. 7 in.	26 ft. 4 in.
Fuselage Length	60 ft. 1 in.	55 ft. 3 in.
Cargo Capacity	3095 cu. ft.	2916 cu. ft.
Empty Weight	34,144 lbs.	32,500 lbs.
Max. Takeoff Weight	74,000 lbs.	54,000 lbs.
Payload—500 mi.	31,250 lbs.	17,800 lbs.
Crusing Speed at 10,000 ft.	231 mph.	214 mph.

THEY MUST BE TOP QUALITY OR THEY MUST BE SCRAPPED



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Movement of the flight deck forward 10 ft. increased the length only five feet, two of which went into lengthened tail booms and three into the nose. By adding the tail boom length near the engine nacelle, the same empennage and tail boom assembly can be used on both C-82A and C-119.

The new engines required extensive redesign of the power plant section and location of the oil coolers in housings directly behind the landing gear on the bottom of the nacelle permitted a thorough clean-up of the engine cowlings. Carburetor and intercooler air is now taken in through openings in the wing leading edge inboard of the engines, the various drag-producing scoops of the C-82A nacelle having been completely eliminated.

▶ **First Fight**—The new Packet, which flew for the first time duiring the second week in November with Dick Henson at the controls, is designated C-119A and actually is a modified production C-82A in accordance with a supplement to the regular contract. A standard C-82A fuselage was extended forward and the wing center section is the same. These modifications were made to test the configuration prior to actual fabrication of the production C-119B, which will feature a fuselage 14 in. wider and a center wing section the same additional width to clear the new high activity square-tipped "paddle props" employed.

Production plans for the C-119B have been developed by production chief Willard L. "Bill" Landers in full accordance with industrial preparedness plans coordinated by Fairchild president J. Carlton Ward, Jr., industrial mobilization planning expert.

▶ **Production Plans**—These plans started with the initial design of the airplane by Armand J. Thieblot, Aircraft Division Chief Engineer and Mike Cozzoli, C-119 Project Engineer. By designing seamlines and breakpoints for possible high-volume production, the engineers laid the basic groundwork for a rapid expansion of production in the event of emergency. Bill Landers then evolved a novel system adaptable to both high and low-volume production.

This consists, essentially, of a circular pair of rails on which an assembly jig rides on wheels. As it progresses around the tracks, sub-assemblies, each with installed and checked-out internal equipment, are added until the entire plane is hoisted from the truck and rolled out the line. Landers explains that by simply adding jig-cars to this miniature railroad final assembly can be increased to any desired rate in a period of hours.

Backing up this final assembly operation are similar low- and high-volume systems designed around automatic riveting operations wherever possible. Wartime experience revealed that a two-man riveting team produced about 250 rivets per average workday whereas the well-known Erco automatic riveter consistently produces 12,000 riveted joints per day by the same two men (or women).

▶ **Strength Added**—Redesign of the C-119 wing increased its strength from the C-82A load factor of 2.60 to 3.65, which was accomplished by increasing the size of spar caps, wing skin panels and lower surface corrugations. The new wing uses 75S in certain heavily-loaded skin, and magnesium in the leading edge as well as numerous castings.

Many of the detailed improvements scheduled for incorporation on the C-119B have already been integrated into the C-82A production line and the current model is a vast improvement over the prototype, design work on which began during 1941 when Thieblot sketched an actual boxcar and began adding wings and a tail to it. The (then) Army Air Forces approved the mock-up and layout drawings the following year and the prototype was completed in less than 21 months, famed Ben O. Howard taking it aloft for the first time on Sept. 10, 1944.

Production on a contract for 100 got under way early in 1945 and the first aircraft rolled from the line in May. Urgently needed as a paratroop transport, the C-82 contract was increased to 200 in June, 1945 and simultaneously North American Aviation received a contract to built 700 at its Dallas plant, the first competitive bid contract awarded since Pearl Harbor.

▶ **Production To Date**—Fairchild's Hagerstown, Md. plant delivered nine aircraft during 1945 and North American had completed 3 C-82N when the contract was cancelled following V-J Day. Fairchild continued its production at a rate reduced to 8/mo., completing 76 last year and 85 to date this year. The contract for 200 is scheduled for completion June, 1948 at which time the line will have been converted to C-119B production.

Majority of the C-82A has gone directly to the 9th Air Force Troop Carrier Command. Six Packets have been assigned to the Air Transport Command for aerial rescue work, and carry helicopters and special emergency equipment. The Hagerstown plant recently completed special winterization modifications to 34 Packets for assignment to "Operation Yukon," a four-month exercise in the Arctic to test operational problems in frigid temperatures.

Many of these modifications were developed at the Air Force's new climatic hanger at Eglin Field, Fla. Chiefly, these changes require elimination of plastics, synthetic rubber products, etc. and extensive changes in power-plant, electrical and hydraulic equipment. Wingtips and tails were painted a brilliant red to aid recognition in the snow should a forced landing be made.

▶ **Tractor Tread**—Following extensive tests on a converted Douglas A-20 both at Wright Field and at Hagerstown by Fairchild engineers, special track-type landing gear has been developed for the Packet and is now undergoing tests.

The gear contains a wide rubber belt revolving around main and bogey wheels to provide additional bearing area for the aircraft on rough, soggy or sandy fields. The gear is fully retractable into the Packet nose and engine nacelle and is expected to enable the craft to operate from any cleared field of suitable area regardless of weather or surface conditions.

Air Force, Army Ground Forces and the Army Medical Corps are developing special lightweight versions of most standard combat equipment to permit air delivery by the Packet, and Gen. Jacob L. Devers, AGF chief and one of the most enthusiastic Packet proponents, believes that one of the new infantry divisions, about 17,000 men with accompanying equipment and supplies, can be air delivered by 700 Packet C-119B's in a single air lift or by about 250 operating in shuttle.

▶ **Detachable Fuselage Model**—A new version of the Packet, the "Pack Plane," is undergoing development. Already established as a procurement project by Air Materiel Command at Wright Field, the new craft is essentially a standard Packet with a detachable fuselage. Crew compartment is mounted atop the wing and a special bicycle landing gear unit mounted in each nacelle provides support for takeoff after delivery of the container.

All branches of the Army are enthusiastic about this long-sought cargo-plane configuration, which would completely eliminate ground loading time and permit the air delivery of ammunition, for example, and an immediate fly-away of an adjacent container bearing wounded personnel.

Fairchild sales manager Charles J. Roggi believes the Packet the ideal configuration for commercial air freight lines. It can operate at less than 7 cents per ton-mile up to 500 mi. and can carry a 5-ton load for 1000 mi. for 8½ cents per ton mile. Only commercial test to date was a joint Post Office Dept.-United Air Lines coast-to-coast operation in October, 1946, when 5¢ airmail was introduced. A special Packet was equipped as a flying mail car and clerks sorted mail in flight.

The Fairchild Packet, fat, square and unlovely, appears clearly destined for an epic career at its specialty: the prosaic but vital job of cargo carrying.

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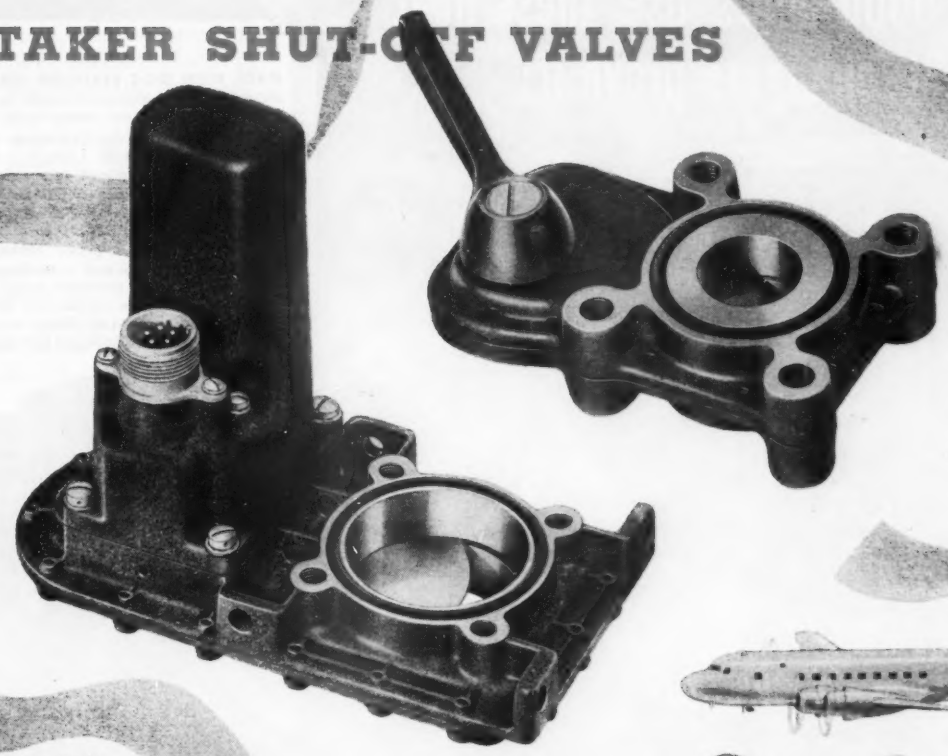

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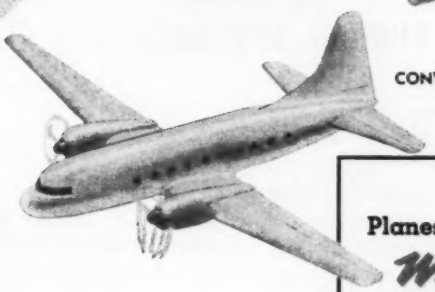

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Flight Engineer Trainer Saves Expense

A net saving in training time amounting to 20-40% has been achieved by Lockheed Aircraft Service, Inc. in training flight engineers for operation on the Constellation. Usually 50 to 100 hours of actual flight time are required to train a flight engineer. However, with the use of a specially designed flight engineer's trainer, the time and cost of the training has been materially reduced, depending on the previous experience of students.

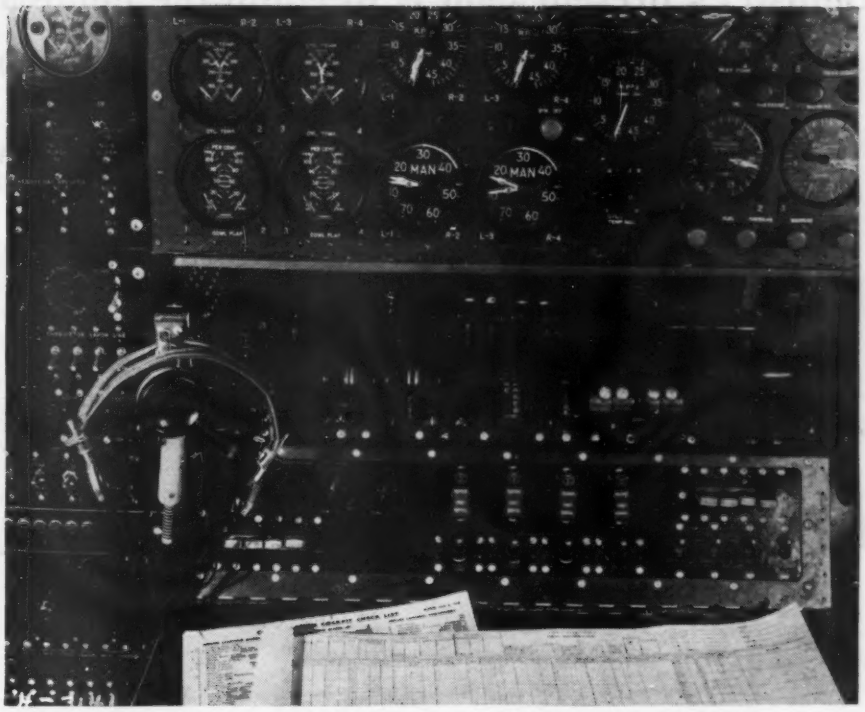
The flight engineer's trainer, designed and built in the special devices shop at Lockheed's Burbank base, closely duplicates all of the functions of the Constellation flight engineer's panel in flight. The device provides the same training for the engineer as is provided for pilots by the Link trainer, and is believed to be the first such trainer to use electrically operated instruments from an airplane. All of the actual flight conditions except motion can be simulated.

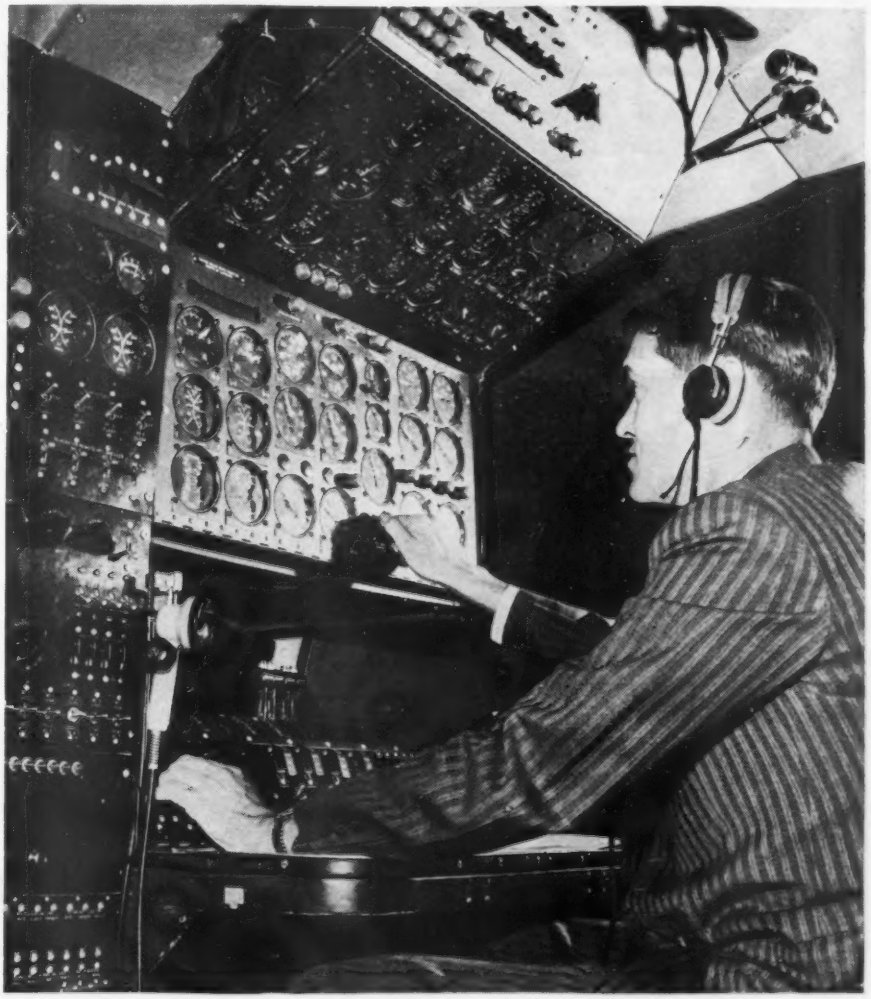
A loud speaker, synchronized with engine controls, produces the sounds of engines; lighting effects duplicate day and night aspects of flying.

Familiarization of the students with every instrument on the panel board of the station is especially emphasized in the course of training, in addition to courses in emergency procedure which normally could not be conducted without jeopardizing the safety of the airplane.

Two courses of instruction are offered by Lockheed's training department. Experienced flight engineers with training in aircraft other than the Constellation receive six weeks intensive training during which time they become completely familiar with phases other than their own. Twelve weeks of instruction are required for inexperienced flight engineers. Classes are limited to eight persons whenever possible so that the instructor can give closer attention to the individual.

Lockheed provides free ground training for one flight engineer with the purchase of each Constellation. Charges for the training of additional flight engineers have been established at approximately $1.00 per hour; this charge reimbursing Lockheed Aircraft Services only the cost of conducting such training. To date this organization has trained 238 flight engineers for such Constellation operators as TWA, Eastern Air Lines, American Overseas Airlines, KLM, British Overseas Airways, Air France, Aer Rianta Teoranta, Linea Aeropostal Venezolana, Quantas Empire Airways and Pan American Grace Airways.





Engine control quadrants and electrical controls of the trainer (above); Irving L. Larsom (below) checking cylinder head temperature and operating cowl flap controls.

French Postwar Designs In Production

Industry's present plan is to equip the home and Empire; then concentrate on exporting aircraft to world market.

By MICHAEL MARSH
(McGraw-Hill World News)

PARIS—French aircraft output has been lagging this year and exports of new planes have been negligible, but planemakers are continuing to produce a variety of prototypes. With these planes the French industry hopes first to re-equip aviation at home and in the French empire, and then by the end of 1948 to begin making its weight felt in world markets.

Apart from tourist planes exhibited this summer at the government-sponsored competition, here are the latest prototypes of the various nationalized firms:

• **The Nord company** is still working on its "Noroit" (N-1400) twin-engine all-metal hydroplane, exhibited at the Paris Air Show last winter, but which has not yet flown. Twenty-five of these craft have been ordered by the French Navy for reconnaissance and life-saving work. Cruising speed is slated at 135 mph. with two Gnome-Rhone 14R engines of 3200 total hp. at takeoff and loaded weight of 16.3 metric tons. Wingspan is 105 ft., length 70 ft., height of fuselage 11.8 ft. and wing area 1075 sq. ft. Six 20-mm. machine guns are to be carried, and a crew of seven.

Interior and exterior views of the SO3OR.

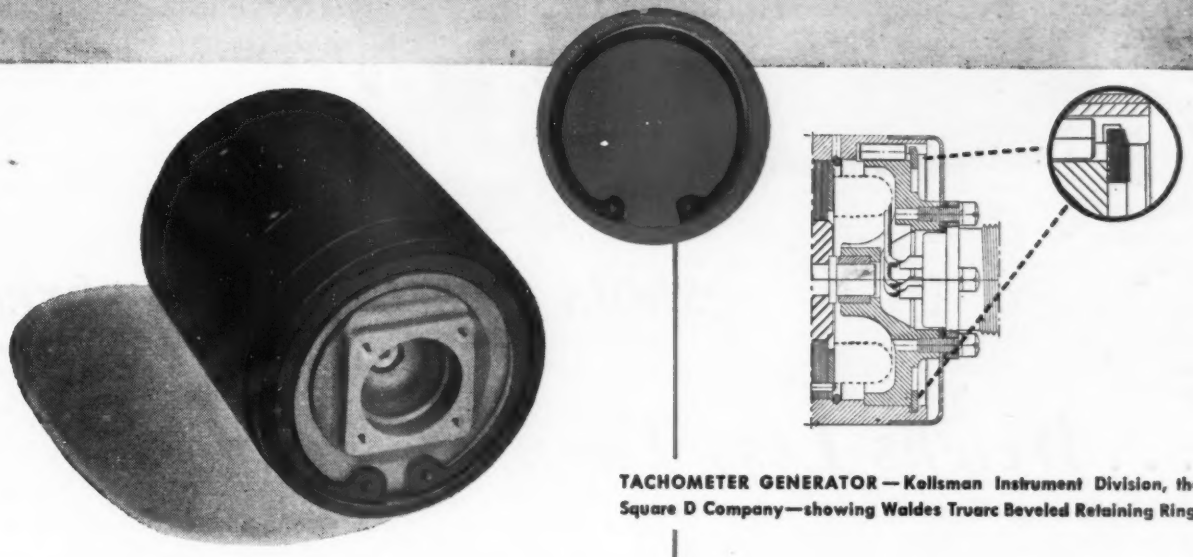
Front view of the Nord 1500 on display at a French showing.

Nord has also developed a smaller aircraft-carrier torpedo bomber for the Navy powered by the same two engines: the all-metal "Noreclair" (N-1500), which had its test flight August 29. The double-dihedron wings are folded by a special hydraulic mechanism which rotates them upward toward the rear, giving, it is claimed, the least resistance to the wind both during and after folding. The forward landing wheels retract into the engine nacelles.

Carrying a crew of two, and 1.2 tons of fuel for a loaded weight of 10.8 tons, the "Noreclair" has a theoretical top speed of 335 mph., cruising speed of 250 mph., landing speed of 90 mph., landing roll of 550 ft. and takeoff roll of 800 ft. Wingspan is 64 ft., length 46 ft., height 21.2 ft., and wing area 495 sq. ft. At the rear of the wing in the fuselage is a glassed cockpit which, together with a perisope-sight above the fuselage, gives the radio-operator-machine gunner ample visibility for sighting the far-rear remote-control machine gun turret. Two other fixed machine guns are fixed in the wings.

• **The Nord N-2100,** which had its first flight at the end of April, is a two-motor rear-prop all-metal transport with square fuselage and the high wing planed half way back from the nose. Chief advantages of the rear-prop and wing arrangement are stated to be eliminating danger to passengers in case of propeller accidents and easier soundproofing, as well as full range of vision for the eight passengers. Powered by two Potez 8DO3 motors of 425 takeoff hp. each, the

Truarc Beveled Ring takes up end-play, eliminates shims, saves 20 minutes' assembly time



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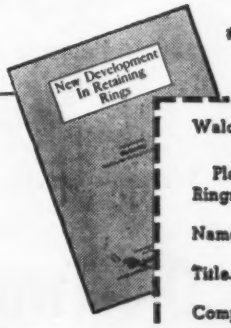

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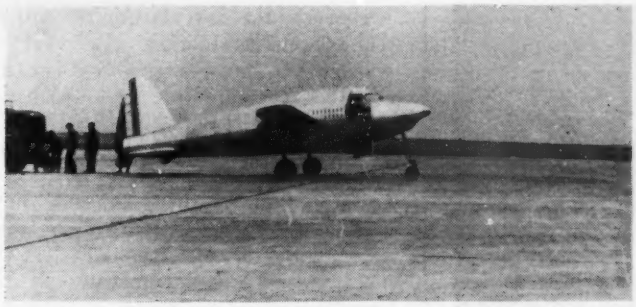


Side view of the SO 6000 prior to takeoff.

The N 2100 shown with gear down, ready to land.

N-2100 has a cruising speed of 200 mph., takeoff run of 2800 ft., and gas consumption of about 40 gal. an hour. Wingspan is 58.5 ft., length 44 ft., height 12.5 ft., and wing area 410 sq. ft. The second model will be built with forward props.

Nord is also building a two-place jet plane, to be powered by two R-R Derwent motors, which should be finished by the end of the year and is known as N-1600. It has begun construction for the Navy of a second jet with folding wings, for carrier use. And, finally, it has nearly finished building of a two-place helicopter (N-1700) with 33 ft. rotor, to be powered by a Mathis 160 hp. engine.

• **The Sud-Ouest company** is beginning a series of 45 of its 30-passenger SO-30R, which it claims is the fastest (340 mph. maximum) twin-engine commercial plane available. Powered by two Gnome-Rhone 14R engines with 3200 total takeoff hp., this all-metal plane has a wing span of 84 ft., length of 60.3 ft., height of 19.3 ft., and wing area of 882 sq. ft. The cabin features neon lighting, full soundproofing, bar, etc.

• **Among other Sud-Ouest** prototypes, the jet SO-6000, built for a year, has still had no speed tests, though it has been aloft powered by a German Jumo-004 jet engine. A second high-speed plane, the SO-M1, is being readied by Sud-Ouest. This craft, with swept-back wings, is designed primarily for aerodynamic research and will be flown both as glider and with motor. Wingspan is 29 ft., and length is slightly over 29 ft., with wing area of 185 sq. ft.

A small transport, the SO-7010, will have its test flight soon. This six-passenger plane, powered by two 180-hp. Mathis engines in tandem, has a cabin which can be removed from the fuselage and replaced by a different cabin with changed fittings if it is desired to change the type of service. The cabin has four doors, two on each side, avoiding need for a corridor and allowing the seats to stretch all the way across the plane. The SO-7010 has a wingspan of 48 ft., length of 36 ft., wing area of 355 sq. ft., and theoretical cruising speed of 186 mph.

• **The Centre company** has nearly finished the prototype of its four-engine "Cormoran" (NC-211), designed to carry 13 tons of cargo for over 600 miles. It also has been testing a bi-motor torpedo bomber, the NC-1070.

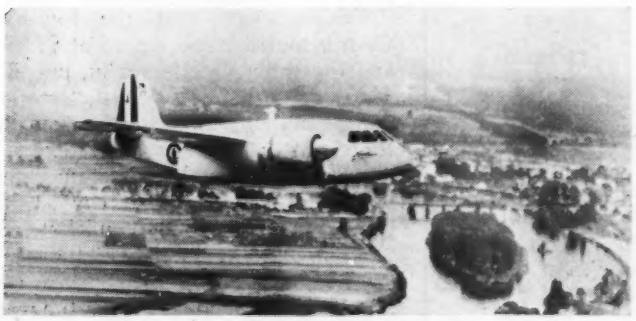
• **The Sud-Est company**, last of the four nationalized concerns, has recently begun construction of a jet plane, the SE-2400, about which no details are yet available. This company is pushing hardest however its four-engined SE-2010 transport of which twenty-five have been ordered by Air France (Aviation News, Jan. 13, 1947). The prototype of this craft should be completed by year's end, and others in the series have already been begun. Sud-Est is also building the second of its giant six-engined hydroplanes, the SE-200 (Aviation, Jan., '47), though no orders have yet been received.

Among the private companies, Ateliers d'Aviation Louis Breguet is working on a four-motor 35-ton hydroplane and a four-motor cargo plane capable of carrying 18 tons of freight. Etablissements Fouga has also developed a cargo glider for 3.5 tons of freight. Known as the CM-10, this glider prototype has recently been finished under contract by the Nord company. Most of the private firms, however, concentrate on tourist planes.

Volume output in the French industry during the spring and summer fell considerably below the level of 118 planes a month averaged last year, due largely to strikes and summer holidays. More recently increased output, of the new models at least, is reported. Nord is now producing one a day of its Noralpha four-seaters, and as soon as the new Regnier motor for its three-place Norecrin is officially approved it expects to start producing up to five a day of the latter planes. Centre is continuing to push the series of its NC-702 transport, of which 160 have so far been built, largely for the French Army, but for which orders have also been received from Poland, North Africa and Sweden.

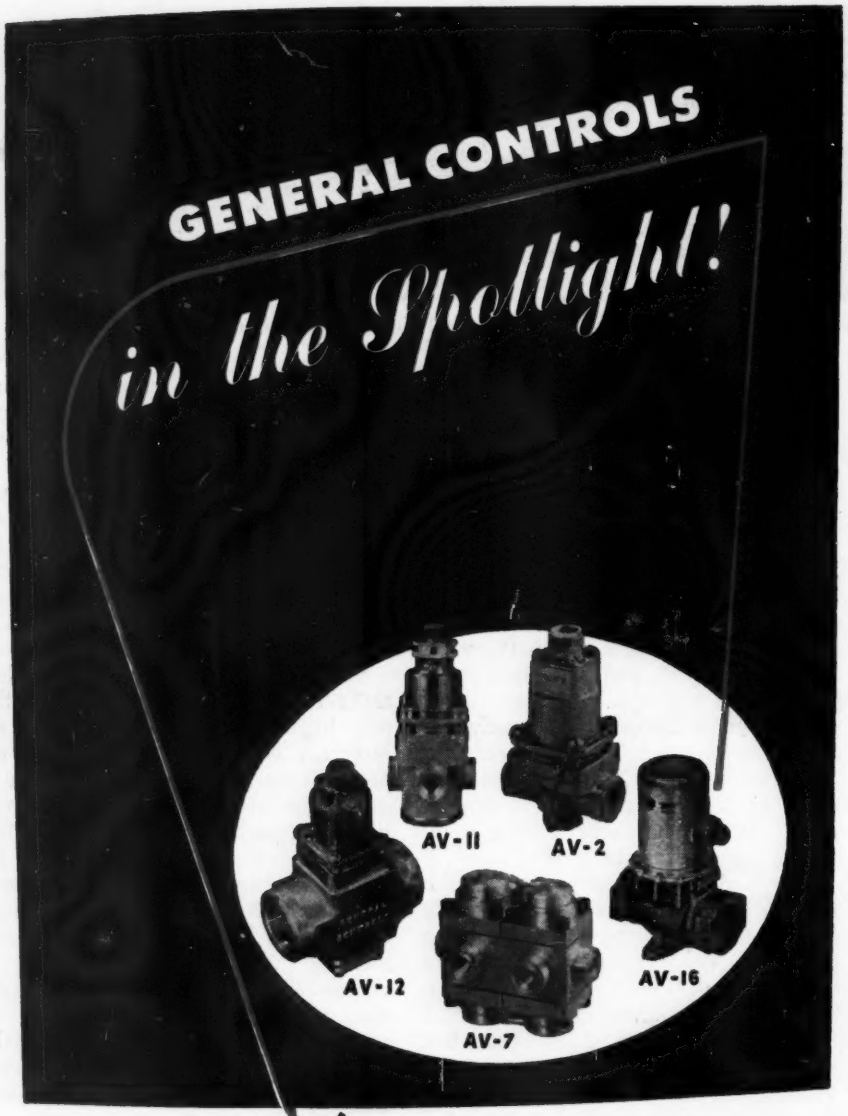
Volume production is only beginning, also, on the wide variety of "reconversion" products which are to be manufactured by French aircraft makers. Most plants are devoting between 15 and 25% of the resources to this program, which was launched officially about a year ago and is designed to hold together working force and equipment for later aviation production. Some plants, however, have switched over completely. The aircraft engine factory at Tarbes, for example, is making now only electric motors.

• **Sud Ouest** is just starting to turn out its aluminum-panelled refrigerator, called "Frigeavia." Centre has made so far only twenty tractors. Output of aluminum buses, furniture, suitcases, etc. has also been small to date, but it



The Nord 1500 in flight.

Ground photo of the Nord E 100. (All photos World News)



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is expected the next six months will see real volume production.

• Engineers of France's Sud-Est aircraft company are drawing up plans for a 140-ton hydroplane, the SE-1200, to be powered by eight 3500 hp. engines placed in tandem.

Before building this giant craft, however, a five and a half ton flying pilot model is being constructed to test the planned construction features of the larger plane. This model will have a wing span of 70.5 ft., length of 54 ft., and height of 15.7 ft. It will be powered by four single 220 hp. engines. Construction of the model is already under way at Sud Est's waterside plant of Marignane, on the Etang de Berre, a large sea-fed lake near Marseille.

With the fifth Late 631 (six-engine hydroplane of 71.5 tons loaded weight) now being built at Sud-Ouest's waterside St. Nazaire plant, this new development indicates the continuing French interest in hydroplanes for transatlantic flight. Sud-Est has also built a hydroplane about the same size as the Late, the SE-200.

Possibilities for these craft were discussed at the French Aviation Congress last Spring.

In the export field, trade has been minimal except with surplus planes largely American, and disposed of practically for a song. For example, in the first seven months of this year total French exports of tourist planes consisted of five craft shipped to Belgium at a total price of $2500, and in the multi-motor category 110 planes shipped the Czechs for $50,000. Last year the 280 multi-motors and 385 single-motors sold at an average value of $650.

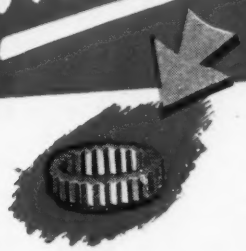
An official export agency representing all French constructors, public and private, has been set up however. Known as Office Francais pour l'Exportation du Materiel Areonautique (OFEMA) this organization has now established agencies in most countries of the world.

Though the general French attitude is to meet home and French Empire needs first, OFEMA hopes to make itself felt in world markets next year with a plane for every need. As soon as the planes are available for export it intends launching a wide publicity campaign to make them known.

Prospects are that the four-place Courlis tourist plane, priced at $12,500 and the three-place Norecrin, priced at $10,000, and the SO-3OR transport, will be available in sufficient quantities for export early next year. Later in 1948 will come the as-yet-undecided winner of the two-seater contest, the giant transports SE-2010 and Late-631, and one of the cargo planes.

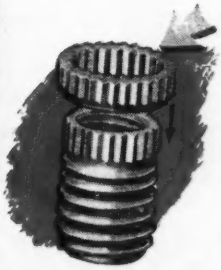
These are the principle stars with which OFEMA hopes to woo the world market.

This ring LOCKS Inserts or Studs to Parent Materials



Rosán Locking System prevents loosening or turning—even under vibration

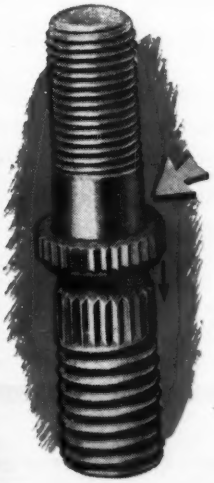
Studs and inserts become an integral part of the parent material with the Rosán Locking System. A ring, serrated both inside and out, locks its inner teeth with the mated collar on the stud or insert, and the outer teeth broach their way into the parent material. Result—a completely permanent installation that can't loosen or turn—yet can be removed easily, if desired, without injuring the parent material.



FASTENERS CAN'T PULL OUT OF SOFT MATERIALS with this Threaded Steel Hole

Rosán Inserts . . . give soft materials the strength of a steel tapped hole to hold fasteners in position under both tension and torque. A serrated ring locks the insert to the parent material so that it can't loosen, turn, or pull out of aluminum, soft metals, plastics or wood.

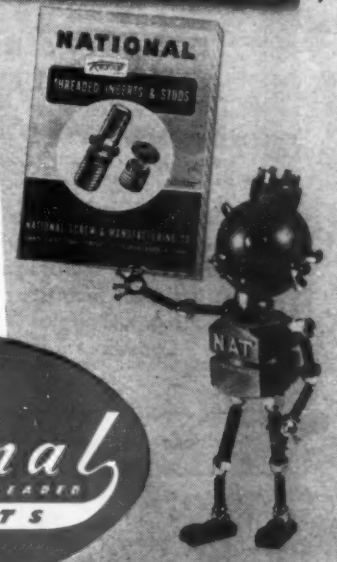
This threaded steel hole can be removed easily with an ordinary drill and any simple wedging tool—and replaced easily—without disturbing the parent material.



ROSÁN STUDS STAY TIGHT

Rosán Studs . . . can't loosen or turn—even under vibration—because the serrated ring locks the stud to the parent material. Rosán Studs can be removed and replaced easily—with simple tools.

Write today for a catalog showing applications of Rosán Inserts and Studs made by National.



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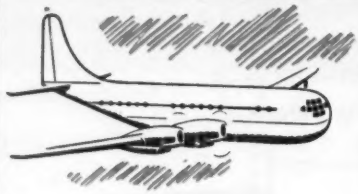

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Drop Forging of Turbine Blades Eliminates Machining Operation

Although more expensive than conventional procedures, precision process gives metallurgically superior product with better mechanical properties and close tolerances.

By CARL I. SCHWEIZER,
Superintendent, Turbine Forgings Division,
The Steel Improvement & Forge Co., Cleveland, Ohio

The manufacture of turbine blades and compressor blades by the drop forging process presents problems which should be of considerable interest to metallurgists, design engineers, and purchasing agents.

Probably one of the clearest methods of describing these manufacturing problems is to point out the basic differences between blade forgings and the more conventional alloy steel aircraft forgings. These basic differences can be generally classified under four headings: (1) Differences in design, (2) Differences in material (both the material used for dies and the material being forged), (3) Differences in tooling, and (4) Differences in handling and processing.

▶ **Design Differences**—A conventional aircraft forging must conform to the user's design, but is normally allowed forging tolerances as outlined by the Drop Forging Association. These tolerances allow for slight errors in die sinking, and for normal die wear over a forging production run. They are classified as "Commercial Tolerances" and "Close Tolerances."

An ordinary forging weighing .6 lb., for instance, would carry a commercial thickness tolerance of plus .030 in., minus .010 in., or perhaps a close thickness tolerance of plus .015 in., minus .005 in. In most cases the conventional forging is used as a structural component whose dimensions may vary within the limits of commercial tolerances without causing undue difficulty during assembly and without seriously affecting the stresses in the assembly. As long as the desired shape and adequate strength are present, then, the conventional forging is usually acceptable.

In comparison, a blade forging weighing .6 lb. frequently carries a thickness tolerance of plus or minus .005 in. This in itself does not seem so extremely close unless certain other factors are considered. In the first place, the blade forging is not the same type of structural component as the ordinary forging. It is primarily an airfoil and serves a definite aerodynamic function. Due to the airfoil design, it is not too practical to machine-finish the contour of a blade, and therefore the ultimate contour and finish of the airfoil must be realized in the forging operation. This requirement plainly places the blade forging in a class by itself insofar as forging tolerances are concerned, and makes even the close tolerances of the Drop Forging Association too lenient.

It is the practice at the Steel Improvement & Forge Co. to work out blade tolerance agreements with the user in advance, taking into consideration the particular blade design involved. These tolerances limit not only thickness, but also cover variation from true contour (really a smoothness tolerance), tolerances covering the degree of warp, or twist, and limitations on the amount of bow, or deflection (straightness tolerance).

Another design factor which is different in blade forgings as compared to ordinary aircraft forgings is the ratio of blade surface area to blade thickness. The blade forging is much thinner in relation to its projected surface area than an ordinary forging. This factor necessitates using a larger hammer to fabricate blades than to forge conventional forgings of comparable weight.

▶ **Differences in Material**—The stresses to which blades are subjected in service require that they be made of the best materials available. Rotating blades in an axial flow compressor, for instance, are subject to centrifugal stresses (tensile), vibration stresses (tending to cause fatigue failure), and bending. Turbine blades are subjected to the same stresses, but must be able to withstand them at elevated temperatures without excessive stretching, or creep.

The paradox of turbine blade forging is that the forger must deform and shape given alloys at elevated temperatures, when these alloys have been carefully developed to resist deformation at high temperatures (in service). This is another reason why the forging of blades normally requires heavier equipment than would be used to produce conventional forgings of the same weight.

It is easy to visualize that the forging of these special alloys would cause excessive die wear were the same die materials employed as for producing ordinary forgings. It is the practice in forging most blades, therefore, to use special, highly-alloyed die steels which are harder, and less prone to wear. These die steels are from three to four times as expensive as regular die steels. In gaining the hardness and wear resistance offered by the special die steels a certain amount of ductility is sacrificed, with the result that die breakage is a much more serious problem in the forging of blades than it is in regular forging work.

▶ **Tooling Differences**—"Tooling" in this discussion will be used rather loosely to cover not only tooling as we usually define it, but also various other types of equipment used in the manufacture of forgings.

Blade forgings require more tooling, more elaborate tooling, and more accuracy in tooling than conventional forgings do. Die sinking has to be extremely close. An error of .002 in. or .003 in. in the sinking of a blade die may very well use up half the forging tolerance before the dies ever reach the forge shop. Templates and master dies, therefore, are made accurately by projector comparison to 10 × or 20 × size layout drawings. An unbiased inspection department (not under die room supervision) is required to approve all dies before they are released to the forge shop for production.

Inasmuch as precision blade forgings are used in service with the as-forged surface present, it is extremely important that there be no scale pits, surface irregularities, carburization, or decarburization. This requires the use of special, controlled atmosphere heating furnaces. Accurate, automatic recording pyrometers control the forging temperature to within very close limits.

Running clearances in the hammer equipment are held to a minimum. This allows for small adjustments for die shift without fear of inconsistency in the dimensions of the ultimate forgings.

The tooling required for inspection purposes can be grouped into two classifications: (1) Layout inspection tools, (2) Production inspection tools. Layout tools do not vary much whether the forging being inspected is a blade or a conventional forging except for the addition of a guillotine gauge when inspecting blade forgings. This gauge is used for checking simultaneously from two to five sections of an airfoil for contour, bow or deflection, warp angle or degree of twist, and indicating die shift or other die line-up discrepancies.

Due to the additional duties which fall on the Blade Inspection Department at the Steel Improvement & Forge Co., the Production inspection tooling is

quite diversified. The final surface conditioning of blades is handled by this department so that a continuous inspection can be carried on during these final operations. Therefore, in this department will be found the regular checking and inspection tools such as Magnaflux and Zyglo equipment, but in addition such equipment as grinding and polishing wheels, belt sanders, and sand blasting machinery. Incidently, the guillotine gauges which play such an important part in layout inspection are used in production inspection for 100 percent checking of product.

► **Handling and Processing**—Differences in handling and processing are experienced from the time the forging stock is cut into multiple lengths until the finished forging is packed for shipment to the customer.

While the forging stock for the ordinary alloy steel forging is usually either hot or cold sheared, the forging stock to be used for blades is cut to length in an abrasive-disc cut off machine. It might well be mentioned at this point that the raw blade forging bars as purchased from the steel supplier must be entirely free from surface defects. Normal practice is to use only centerless ground material for processing into blades.

Because of the comparatively thin sections in blades and the non-plastic properties of blade forging materials at forging temperature, several heatings are required before the blade reaches its final dimensions. During the initial stages of forging it is often possible to strike several blows between heatings, but as the final shape is approached only one (or possibly, two) blows can be struck per heating.

Inasmuch as surface requirements for blades are so stringent, several inspections and surface conditioning treatments are given the blades during the forging operation. The typical procedure is to stop forging at several semi-finished stages, sandblast and etch the blades, grind and/or polish out any surface defects, and then return them to the forge shop for further forging.

In heating for forging great care must be exercised not to oversoak at temperature. Even though the materials being forged resist oxidation, some scale is formed at forging temperature and can very easily be hammered into the blade surfaces if proper precautions are not taken.

In considering the normal alloy steel aircraft forging through the above steps, the multiple is heated (in most cases the time at temperature being much less critical), placed in the successive forging impressions and forged to shape, usually all on one heating.

Heat treating varies with the grade of material being manufactured. The chief difference encountered in blade heat treating is that decarburization, carburization, or scaling are not permissible. The closer to inert that the heating atmosphere can be maintained, the more desirable will be the ultimate surface of the blade.

The effect of the additional work, special materials, and careful handling of blades as described herein is to produce a metallurgically and mechanically sound product to very close tolerances.

If a buyer of blades desires a precision-forged product so that he can obtain these metallurgical and mechanical advantages, he will be confronted with the higher-than-conventional-forging price made necessary by the additional services.

British Autopilot Claims More Reliability

A new electric autopilot has been announced by Smiths Aircraft Instruments Ltd., London. Designated as the S.E.P. 1, the device is operated on the rate/rate principle rather than displacement. Smiths contend that discarding the old hydraulic and pneumatic operation and substituting modern developments in electrical techniques has resulted in increased flexibility, increased reliability, and freedom from maintenance.

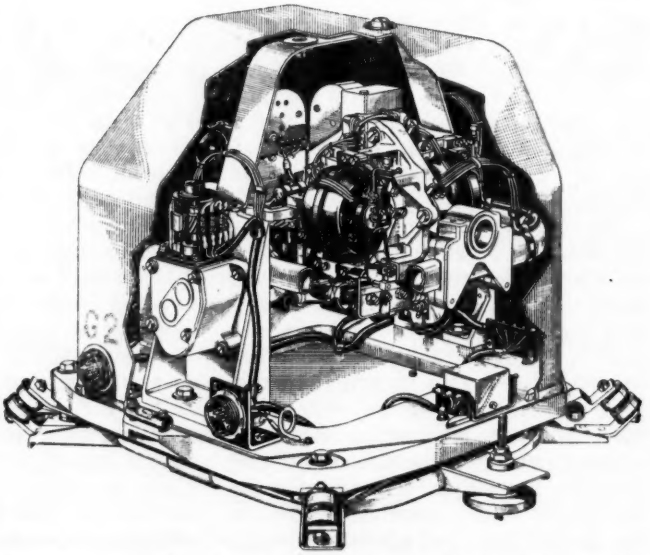
Heart of the machine is composed of three identical gyros which measure the rate of turn respectively about the vertical and two horizontal axes. Separate electric servo motors are employed to control rudder, ailerons, and elevators. Each servo motor is harnessed through its amplifier channel to the appropriate gyro. The gyro signals are fed to the amplifier through a junction box containing adjustable potentiometers which transmit a back-off signal proportional to the rate of turn of the aircraft and provide an accurate means of establishing optimum performance for each type of aircraft.

► **Monitored Gyros**—The gyroscopes are monitored to correct for errors inherent in all gyros. For the pitch and roll gyros simple pendulums are used to provide gravity reference; monitoring of the rudder channel is provided by a remote transmitting compass such as the British Gyrosyn, or any other type capable of driving a signal generator.

Identical, interchangeable servo motors are used for rudder, aileron, and rudder control. These motors feature high torque, low inertia, and almost immediate response—factors which contribute in large measure to the sensitivity of the system.

Electrically operated clutches disconnect servo motors from the aircraft controls assuring complete safety in the event of power failure since disengagement is automatic and instantaneous.

► **Power Requirements**—System power requirements are: (1) a 3-phase AC supply at 115 volts, 400 cycles from an



inverter or engine driven generator maintaining voltage and frequency within ±5 percent, and (2) a DC supply of approximately 2 amps at 28 volts, for the operation of the signal lights and clutches.

Weight is given as 99 lb. 4 oz. for basic installations which consist of components necessary for simple, uncomplicated setups.

Comparison of this English unit with advanced American designs reveals that the British are several years behind us in such development. The Smiths autopilot is complicated by the use of three gyros, each monitoring a single axis, whereas the American device utilizes a single gyro, universally mounted to be sensitive to movements of the plane around three axes.

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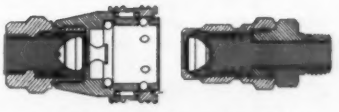
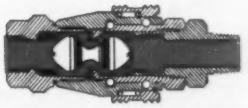
The Hansen Two-Way Shut-Off Coupling.

When you use Hansen couplings, connections and change-overs become a matter of seconds—with no hold-up of costly operations. ♦ ♦ ♦ To connect a Hansen coupling on air, oil, or grease lines, you merely push plug into socket—flow is immediate and completely automatic. To disconnect, slide sleeve back with thumb, plug pops out and supply line is effectively sealed with no leaks or losses. ♦ ♦ ♦ It's the minutes saved on operations repeated over and over that add up to substantial savings. There's a Hansen coupling for every purpose or pressure requirement—for air, oil, or grease—for oxygen—for acetylene—also the new Hansen two-way shut-off coupling which completely seals both ends of line when disconnected.

Write for Industrial Catalog



Red section shows how rubber washer in valve stem contacts valve seat in both plug and socket, sealing both plug and socket against leakage instantly.



Red section shows flow of liquid or gas around spool section of valve, permitting free flow of liquid or gas through coupling instantly upon connection.

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AIRPORT LIGHTING PACKAGE

L-M *Announces*

a complete lighting package for Class I, II, and III airports

Ⓐ **L-M Elevated Runway Lights:** set at 200-foot intervals along runway, and, with green screens, across end, as range lights. Two-piece refractor produces 360-degree horizontal and 180-degree vertical light distribution; almost glare-free. Taps on control transformer provide three steps of brightness—remotely controlled. Easy to install, highly efficient.

Ⓑ **L-M Obstruction and Marker Lights:** Red lens. Furnished with or without transformer in base, as required. Many parts interchangeable with runway lights.

Ⓒ **L-M Rotating Beacon:** CAA-approved for class I and II and limited class III airports. Two standard 100-watt sealed beam units provide rotating beam from 110,000 to 400,000 cp.; life up to 4000 hours. Ceiling height indicator and locator beam set at 5 degrees from vertical. Spare lamps switch on automatically with telltale to control tower. Light weight, only 75 pounds; pole or roof-top mounting. Long life low speed motor. Entire unit requires only 325 watts. No exposed moving parts.

Ⓓ **Bartow type 36″ Rotating Beacon:** CAA-approved for class III to VII airports. Large rotating glass sphere produces one vertical and four horizontal 6-degree beams. Two adjacent 24″ bullseyes produce high candle power beams elevated 1.25° above horizontal. Two Fresnel lenses tilted 12° above horizontal produce secondary wobbling beams visible up to 24° above horizontal. Bullseye on top of beacon produces wobbling beam 7 to 12° from vertical. Beam angles adjustable. Clear primary beams; choice of clear, green, or red secondary beams. 1000-watt lamp; magnetic lamp-changer switches to spare lamp if primary lamp burns out, and energizes telltale to control tower. Silico-aluminum base; 1/6-hp. ac. motor drives beacon at 6 rpm. through safety clutch and worm. Heavy duty ball lower bearing; heavy duty tapered roller upper bearing; give 7 to 1 safety factor. For other details, features, write for Bulletin.

Ⓔ **L-M Power Unit and Control Panel:** all necessary equipment, switches, brightness controls, runway selector switches; main breaker, runway breaker, five accessory breakers for windsock, beacon, etc.; indicator lights; transformer; fuses.

Ⓕ **L-M Cable Splice Kit:** for 2, 3, or 4 cables; greatly simplifies connections in making installation. *Cable* for primary: 600-volt single conductor insulated cable in standard reels ready to cut to exact length on the job. Primary cable and bare neutral are laid together in ploughed trench, and connected with cable clamps provided on lights.

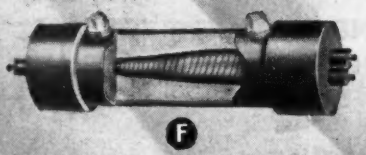
Ⓖ All other equipment required—transformers, fuse cutouts, potheads, connectors, etc. L-M Engineers will design your job, list the required equipment, supply layout and complete wiring diagram.

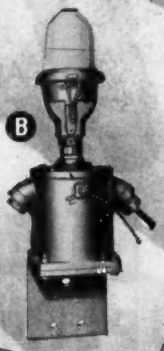
The new L-M Airport Lighting Package makes available a complete, highly efficient lighting system at an average cost of about $1 per runway foot for the entire equipment.

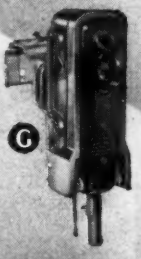
The L-M system meets latest CAA specifications for small airports, permitting the use of federal funds to finance the installation.

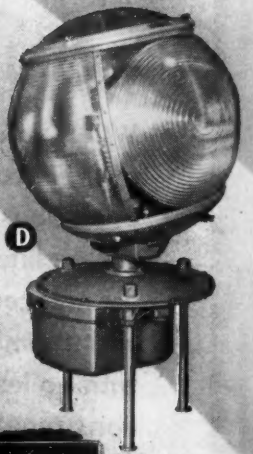
This equipment is designed by airport lighting engineers, men who fly, who know pilots' problems in landing in all kinds of weather, and know airport operating problems.

Note the list and brief description of equipment. Then write for the bulletins you need. When you are ready, the services of L-M airport lighting engineers will be made available to help you plan your installation.









"Open All Night" describes the new L-M package for class I, II, and III airports.

"L-M Rotating Beacon for Class I and II airports" describes in detail the construction, operation, and simple installation of this highly efficient, weatherproof beacon.

"Bartow Rotating Beacon" describes the big 36″ beacon for class III and larger airports.

"The Lights that Bring Them In" is a brochure for large airports describing the principles of the famous Bartow High Intensity Approach and Runway Lighting System.

Also available are detailed diagrams and specification sheets and wiring diagrams for individual equipment and the entire systems. ***Address Line Material Company, Airport Lighting Division, East Stroudsburg, Pennsylvania.***

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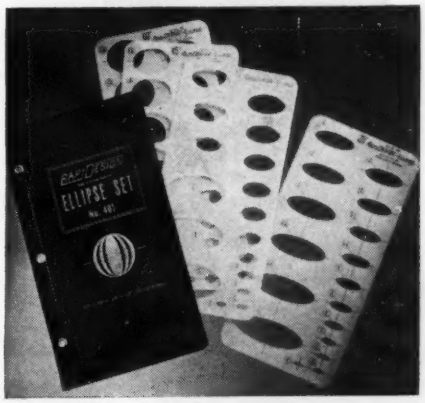
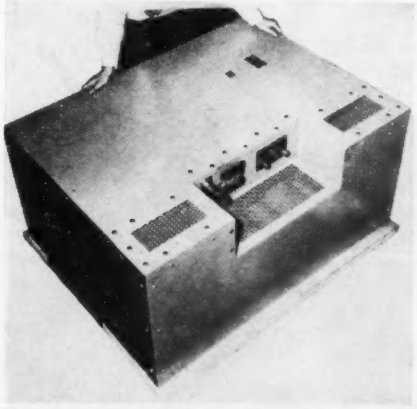
Seen as simplifying execution of aircraft engineering drawings is ellipse set No. 401, marketed by **Rapidesign Inc.**, Box 592, Glendale, Calif., comprising four 4¾ x 9¾ in. plastic sheets with projection range of 20, 30, 45, and 60 deg. Ellipse sizes are ⅜ to 2¾ in., major axes. Centerlines and sizes are printed



on negative side to prevent wearing, and smooth cut edges insure clean drawing. Reinforced folio is included to store and keep set sheets clean. Templates are also available singly.

Deicer Test Power Supply

Intended for use in testing of aircraft de-icers, large "Nobatron" power unit, designated E-28-350, constructed by **Sorensen & Co.**, 375 Fairfield Ave., Stamford, Conn. supplies 350 amp. at 28v. d.c. bettering accuracy 0.5% over 7 to 1 load range. Control circuit is similar to company's smaller models, with modifications to handle 15 kva. input required of rectifier system. Electronic control circuit for entire unit, built on removable chassis which slides



into place on guide rails, will operate from either 115 or 440v. single phase. Control voltage is picked up by leads connected at load to compensate for line drops between regulator and load. Other features include over-voltage protector and external voltage adjustment via small potentiometer. Weight is 2,300 lb.; dimensions are 24 in. high, 36 in. deep, 48 in. wide.

Seat Emphasizes Comfort

Designed to afford greater passenger convenience, new CAA-approved plane seat featuring table that locks in armrests, back cushion lowering to 70-deg. reclining position, and lightweight cushioned leg rest is offered by **Hardman Mfg. Co.**, South Gate, Calif. Metal supports permanently attached to table fit in armrest slots to give steady surface for dining or writing and extend only to inside edge of rests so that passenger can easily reach flush type ash trays. Table is stored in pocket in rear of chair ahead. Leg rest and 70-deg. reclining back cushion add to comfort while sleeping or relaxing, and when chairs are spaced within 40 in. fore-and-aft, limit stop restricts recline to 45 deg.

Cushions are available with either foam rubber or springs, and built-in headrests (ear or pillow type) on back cushion are optional. All upholstery suits are removable for cleaning and replacement through use of Zippers and United-Carr fasteners. Legs are canted near floor to provide maximum aisle width.

Mobile Fire-Fighter

Specially designed as standby equipment for hangars and crash fires, new 40-gal. fire extinguishing engine, offered by **Walter Kidde and Co.**, Bellville, N. J., is built for greater foam output with automatic mixing controls. Equipped with dual tread tires and wheels mounted on double roller bearings, unit will smother class A fires (involving ordinary combustible materials) and class B fires (flammable liquids). Metering control mixes solutions in measured quantities, and substantially increases output. Hose rack carries 50 ft. of 1½-in. coupled chemical hose with shut-off discharge nozzle.

Tires for Icy Runways

Two new aircraft tires, one made by **B. F. Goodrich Co.**, the other by **Firestone Tire & Rubber Co.**, both of Akron, Ohio, feature ingenious construction of steel wire coils imbedded in tread to provide needed biting traction on snowy or icebound runways. Good-

rich tire (seen above) has rectangular coils (shown exhibited in hand) laced into tread. As for Firestone tire (bottom photo), it's stated that metal coils, each ½ in. long and of ¼ in. dia. are carried in tread. Company says that there are almost 8,000 of these coils in single tire.

BOEING'S STRATOCRUISER FLIES WITH CURTISS PROPELLERS

• The BOEING STRATOCRUISER—largest luxury transport for commercial airlines—will soon join the fleets of the many famous airlines equipped with Curtiss reversible pitch propellers for safer, smoother, more enjoyable, more economical air travel.

• To the transcontinental and transoceanic air services, Curtiss Propellers bring many service-proved advantages, including . . .

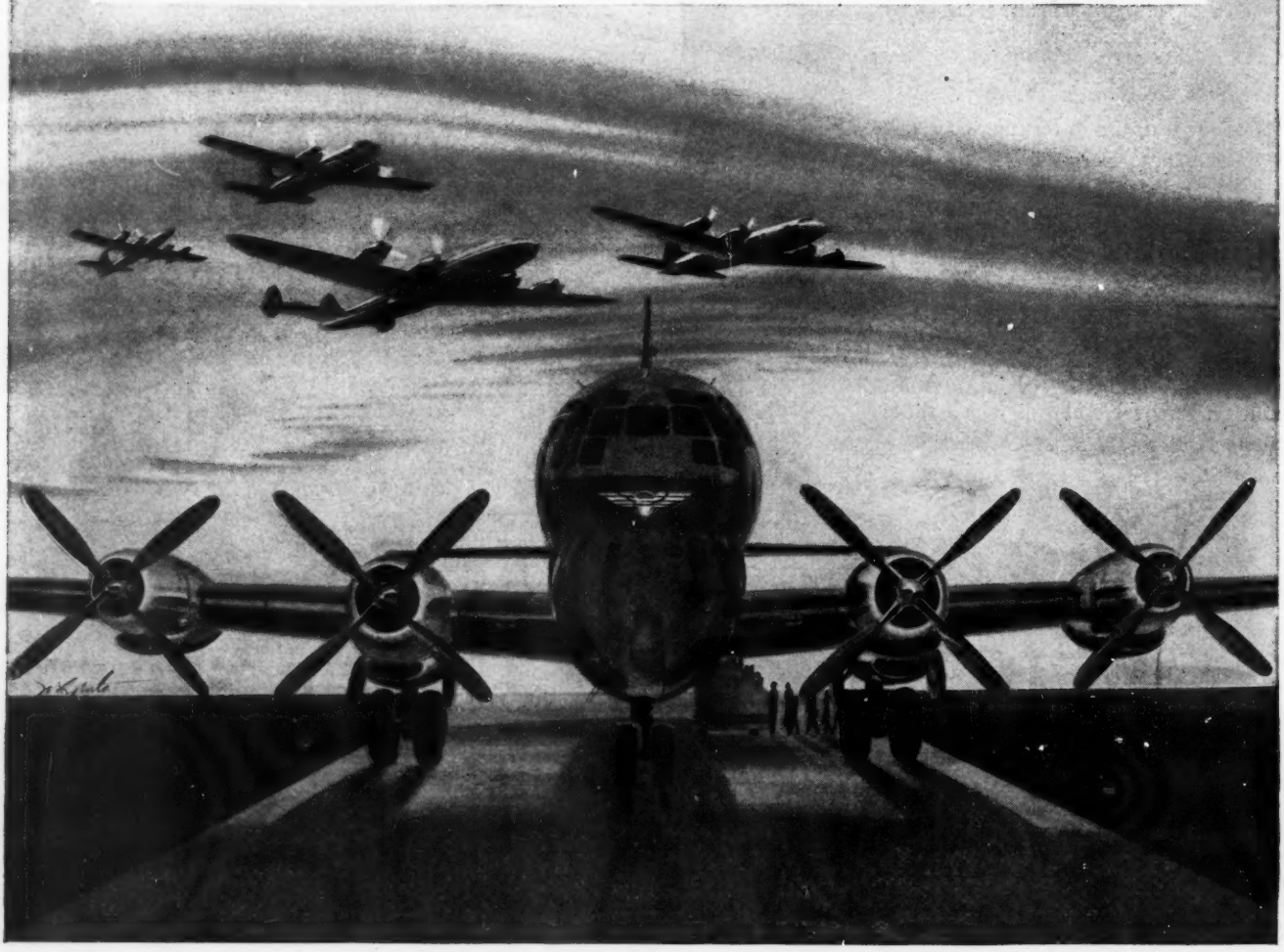
• ***Reverse thrust*** for smooth, air-cushioned landing, effective landing on wet or icy runways, backing or maneuvering without ground assistance, reduced brake and tire wear . . . ***automatic synchronization*** for elimination of noisy, tiring off-rhythm engine beat . . . ***hollow steel blades*** for durability . . . ***selective fixed pitch, dependable feathering, thermal de-icing.***

CURTISS *ELECTRIC PROPELLERS*

A PRODUCT OF

PROPELLER DIVISION **CURTISS WRIGHT** CALDWELL, N. J.

FIRST IN FLIGHT



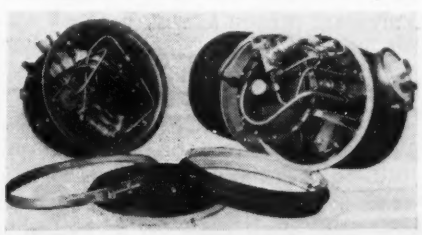
New Sheet-Metal Notcher

Flexible, precision shearing unit for rapid and accurate cutting of notches in sheet materials, is intended to eliminate dies for this application. Marketed as Di-Acro notcher by **O'Neil-Irwin Mfg.**

Co., 358-8th Ave., Lake City, Minn., unit's cutting range extends from light plastics, fiber, mica, leather, and rubber to heavy gages of aluminum and steel. Ninety degree notch may be cut in single operation either at corner or in any position along edge of sheet. Possible is shearing of angles both smaller and greater than 90 deg., and many straight shearing operations are also performable. Flexible gaging arrangement allows notch of any dimensions to be exactingly located, providing precision in duplicated parts. Roller bearing cam evenly distributes shearing pressure simultaneously on both shear blades. Triangular shaped ram controls position of shear blades, to give clean cut in heavy materials. Unit is stated as especially adaptable to model, research, and experimental work.

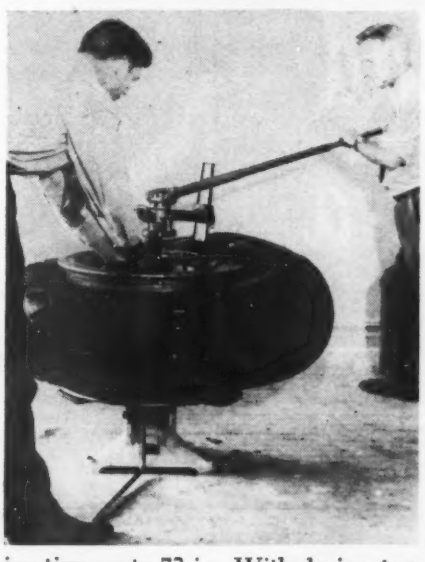
Seals Aircraft Heater Controls

Developed by **Janitrol Aircraft Heater Div., Surface Combustion Corp.**, Toledo 1, Ohio, two new sealed control containers for S-C heaters are intended to facilitate installation, aid in standardizing maintenance procedures, and minimize hazards from leakage or failure of fuel tubing, improper functioning of controls, etc. Applicable for heaters ranging from 100,000 to 300,000 Btu. output, units are stated as also suitable for smaller heaters. Smaller size incorporates fuel filter, air-loaded fuel pressure regulator, and magnetic fuel flow valve; larger size includes two fuel pressure regulators. Either size may be used with electrically operated fuel pressure transmitter to provide direct indication of actual fuel nozzle pressure on instrument panel. Cover is sealed when initially installed, container is subjected to internal pressure test for leakage, and fuel control units in container are also checked for leakage. Connectors and fuel inlet and outlet lines are hermetically sealed where they pass through container shell. While regular operating voltages for containers are 24 for larger, and 12 for smaller type, either voltage may be obtained for each. Containers and parts are available for converting existing exposed control installations to sealed units.



Aircraft Tire Changer

Distributed by **Air Associates**, Teterboro, N. J., new shop aid enables servicemen to remove and mount aircraft tires quickly, safely, and with little effort, and also minimizes chance of damage to tires and wheels. Tires up to 56 in. can be handled on both demountable flange and drop-center wheels, and special attachments are available for servicing tires up to 72 in. With device, two operators are stated as capable of removing or mounting large tire in 7 or 8 min.

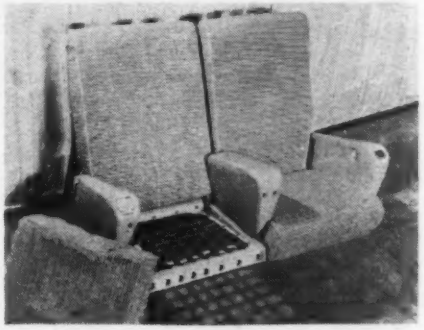


Installs Solderless Terminals

Easily operated foot-press announced by **Aircraft-Marine Products Inc.**, 1522 N. 4th St., Harrisburg, Pa., is offered as efficient, low-cost means of installing solderless wiring terminals. Known as "Ampli-press," unit affords many advantages of company's power presses, including interchangeable crimping jaws that permit installation of wide selection of AMP terminal types such as "Pre-Insulated" (insulation bonded to terminal) and "Solistrand" (for solid and stranded wire), as well as closed-end connectors, and splicing terminals. Foot operation of press leaves hands free to manipulate terminals and wire, moderate pressure on treadle producing uniform, vibration-free crimp. Device occupies only 7 sq. in. of bench area and can be set up quickly.

Plane Seat-Webbing

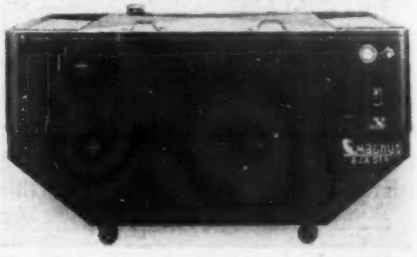
Resilient seat support material, known as Thermo Seal webbing, made by **Artisan Engineering & Mfg. Co.**,

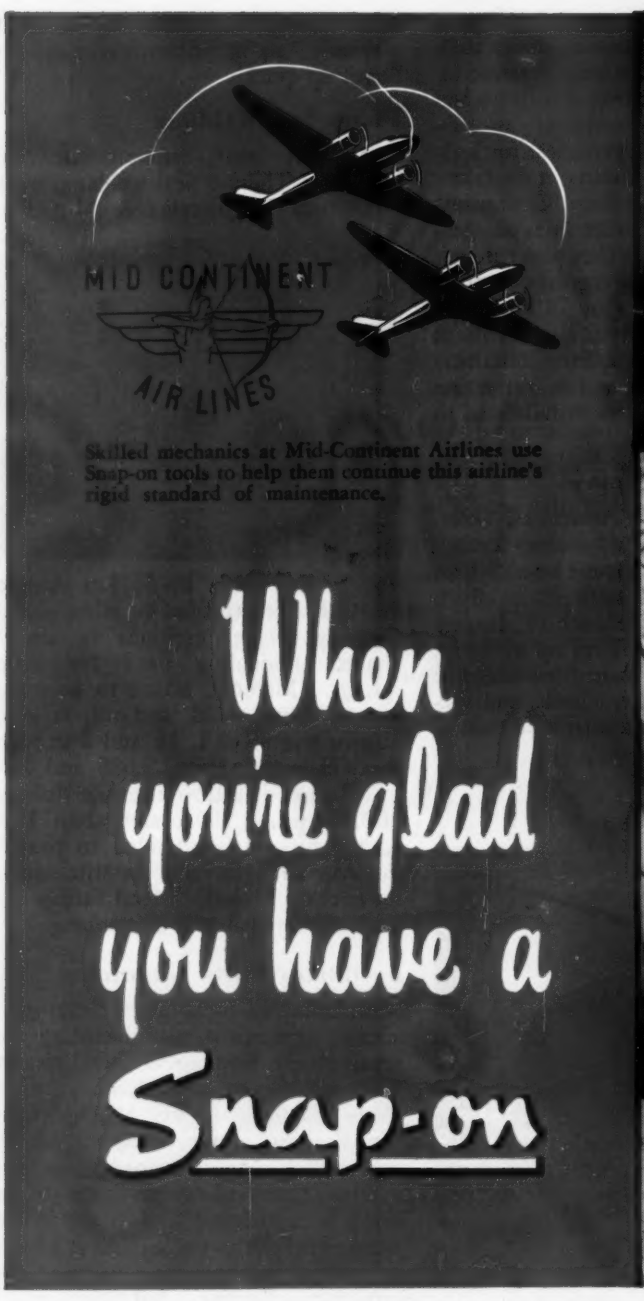


466 S. Robertson Blvd., Los Angeles 36, Calif., is intended to allow use of thin lightweight cushions in aircraft chairs, eliminating need for metal springs. Material, stated to be resistant to flame, mold, and rot, is available in widths of 1, 1¼ and 2 in.; and in thicknesses of .062, .080 and .120 in. Claimed is ultimate tensile strength of 3,000 psi. at 300% elongation. Heat sealing process is intended to provide uniform strength, and no stitching or no riveting is used. Metal fittings can be made integral part of webbing.

Facilitates Parts Cleaning

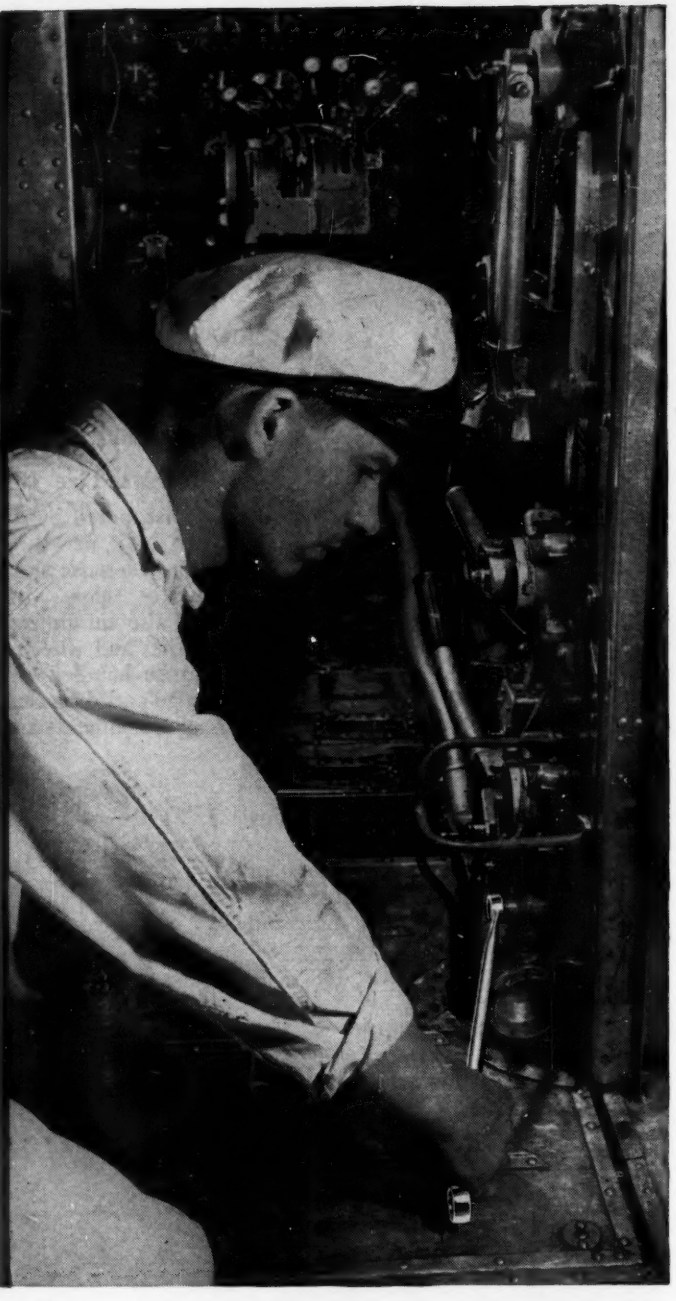
Suitable for metal-parts cleaning in aircraft equipment manufacturing and repair shops, **Equipment Div., Magnus Chemical Co.**, Garwood, N. J.,. offers its re-designed Magnus Aja-Dip cleaning machine. Fully automatic, device requires labor only for loading and unloading. Outward appearance is streamlined, with grouped control and instrument panel. Drive mechanism is located in front of machine for easy access and servicing. Positive, fast cleaning is claimed through mechanical raising and lowering of parts platform 60 times a minute through cleaning solution, fast motion forcing cleaning fluid through all recessed portions of work. Machines, available in 13 sizes and types from midget unit handling few pounds of work to jumbo size handling 2,200 lb., may be used with either cold or hot cleaning solutions, with heat by steam, electricity, oil, gas, or kerosene.





Skilled mechanics at Mid-Continent Airlines use Snap-on tools to help them continue this airline's rigid standard of maintenance.

When you're glad you have a Snap-on

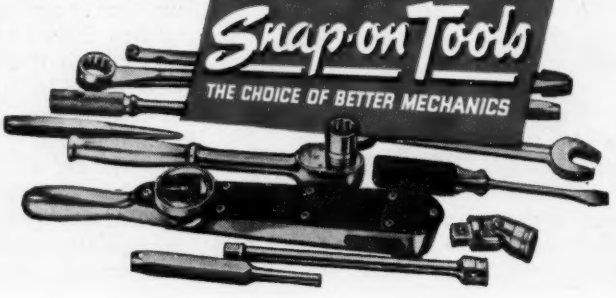


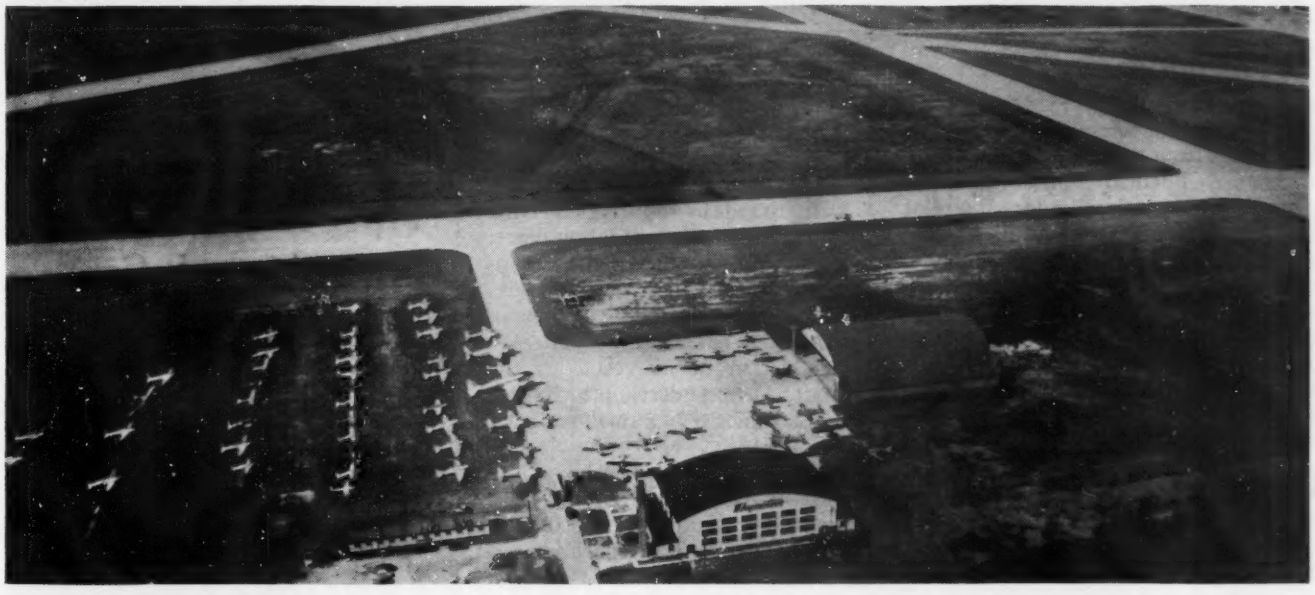
. . . installing check valve on the hand hydraulic pump with a Snap-on — Blue-Point BOXOCKET

Snap-on's Blue-Point Boxockets are *safety tools* with the combined advantages of powerful leverage and extra strength. They completely encircle the nut on all six corners . . . and because of their double broaching, they need only half the space of an end wrench when handle movement is limited. In addition, Snap-on — Blue-Point Boxockets give you two important safety features . . . they cannot slip off or spread on the nut . . . the handles are angled to give clearance from obstructions and prevent skinned knuckles. Complete range of sizes from 3/16" to 3 1/8".

Boxockets are only a part of Snap-on's complete line of quality tools for aviation maintenance available through Snap-on's nationwide, direct-to-user tool service. "Ask your Snap-on man".

SNAP-ON TOOLS CORPORATION
8020-L 28th AVENUE KENOSHA, WISCONSIN
INTERNATIONAL DIVISION: KENOSHA, WIS., U. S. A.





Chicago's Skymotive Inc. Sets New Pattern for Fixed Bases

Henebry and Cochran, World War II aces, bid for executive transport business from Orchard Airport.

By ALEXANDER McSURELY

Fixed base operators in the Chicago area have a new and formidable competitor in the 10-months old Skymotive, Inc., exclusive operator at the big Chicago (Douglas) Orchard Airport, at Park Ridge, north of the city.

Two World War II AAF colonels, John L. (Jock) Henebry, president, and Phil Cochran, vice-president, came home from the war with some definite ideas about how to operate airport service, and are out to get as big a share as they can of executive transport business in the nation's second largest city.

▶ **Operations Expand**—Since the Skymotive operation opened, less than a year ago (Feb. 1947) business has been growing steadily, and an expected seasonal slump had not materialized. They now have 32 planes stored in their two hangars, and approximately 70 more customer tiedown planes at their operation. Two of their most publicized customers have been Milton Reynolds, the Chicago pen manufacturer, who used their base to prepare for Bill Odom's round-the-world A-26 flights, and Preston Tucker, Chicago auto builder, who stables his stainless-steel Budd twin-engine cargo plane at Skymotive in between hops around the country to exhibit the Tucker torpedo motor car prototype.

Henebry and Cochran have a five-year lease on the operation, and they paid "plenty" to the city for it including a cut on gasoline receipts, in addition to their rental. They admit they run an expensive operation, with a total of 44 employes, who provide line service 24 hr. a day, and maintenance 16 hr. a day. Two station wagons and an airport truck are kept on call to haul passengers and baggage between the airport and downtown Chicago, 35 minutes away. They operate a CAA-approved repair station, and recently have added the services of E. Burdick Keefer, former Beech structures engineer, as engineering consultant on major re-build jobs of crashed aircraft.

▶ **Pay-Off Begins**—They are convinced that the expenditures are beginning to pay off, in attracting a group of regular

SKYMOTIVE OFFERS COMPLETE SERVICE: Six (count 'em) services of Skymotive, Inc., Douglas Airport, Chicago operator, are shown here in typical scene. Line man meets customer with forms in hand, tanks are refuelled, radio is checked, special cleaning and maintenance services are arranged, luggage is loaded into special station wagon.

transient customers, who already begin to make their airport a regular port of call whenever they come to Chicago.

Cochran, who handles advertising, publicity and sales promotion for the firm, spends a good deal of his time traveling making personal contacts with firms using executive aircraft and their chief pilots. Magazine, newspaper and direct mail advertising fit into the Skymotive program.

But the main salesmanship is at the base itself, from the moment the white-uniformed lineman "picks up" the plane as it taxis in and guides the pilot to the proper berth on the flight line. A red tag, which lists pilot's requirements, is promptly wired to the plane, with a carbon copy to the line superintendent. Duplicate and original are checked off before the plane is returned to its pilot. Meanwhile station wagon, telephone, secretarial service, and even hotel reservations and theater tickets are provided, if the customer wants them.

▶ **Beech Dealer**—Henebry points out that many business firms using their own transports regularly, have formed the habit of sending their own mechanic along, to insure proper care of the planes in transit. Skymotive maintenance and repair service is aimed at a standard which would make this unnecessary.

Skymotive recently obtained a Beech dealer franchise, one of two in the immediate Chicago area. (The other franchise went to Parks Aircraft Sales and Service at the small Palwaukee Airport, about seven miles away.) Henebry also has a Beech repair station approval certificate. Even before he received the dealership he handled service for Beech in the Chicago distributorship zone.

An experimental plane rental service with a single Beech four-place Bonanza in four months has utilized the plane about 200 hr. at $25 an hour. Considerably more plane rental time could have been sold if additional equipment had been available. They hope to add some more Bonanzas in the spring to this service if the demand continues at its present level.

▶ **Fussy on Pilots**—"We are fussy about the pilots who take out the plane, and if there is any doubt we require a checkout flight in addition to seeing his certificate and log book. As a result we have had no accident record of any importance," Cochran points out.

They use a contract similar to those for auto rentals, and which provides full time use of the plane for a day, for three hours flight pay ($75). If the pilot is weathered in within 500 miles of Chicago, and can't fly, Skymotive stands the expense of the idle days but if he is beyond that zone it is considered the pilot's expense.

Another interesting new angle Skymotive is following is helicopter maintenance. T. H. Reidy, operator of Helicopter Air Service, keeps his Bell helicopter at Skymotive. A Skymotive mechanic graduated from the Bell mechanics school directs its maintenance and repair. Reidy is one of the three remaining applicants for helicopter air mail routes in the Chicago area and will need at least six helicopters if he should win the contract award. He plans to continue to operate at Skymotive in that case.

▶ **Airport Problem**—Future of the operation depends largely on the disposition of Douglas Airport. In the event Air National Guard should combine its operations with the Naval Air Station at Glencoe, Ill., as has been suggested in the program of general consolidation of Army and Navy air bases, the city of Chicago will fall heir to the huge hangars and installations across the field from Skymotive. Henebry and Cochran have their bid in for lease of two of the big hangars if this should work out and have tentative plans for a more elaborate operation. They are also interested in bidding on operation of the new northerly island downtown Chicago lakefront air base and believe that the big outlying airport and the downtown base would make a highly efficient combination operating setup. Eventually they have hopes of establishing two other bases, one on the west coast and one on the east coast, but that comes after they get some more operating experience at Chicago.

A strong factor in favor of their operation is the airport itself, with 24-hour control tower, snow removal, 6,000 ft. concrete runways stressed to take heavy four-engine aircraft, an ILS installation now in operation, and GCA installation soon due. All-weather facilities are drawing many of the twin-engine non-scheduled planes of all types, cargo, freight, and business planes, to this airport, and Skymotive's gas sales and line service are benefiting.

Ensign Sale

First commercial sale of an All-American Ensign, two-place all-metal monoplane, has been made to Robert Pocock, San Jose, Calif. dealer, who will use it as a demonstrator. Sales price on this basis was slightly under $3,000 although fly-away Long Beach, Calif. factory price is $3,495.

Sale was made on the basis of a temporary approved type certificate issued by 6th region Civil Aeronautics Administration office. Final ATC is scheduled to be issued by CAA in Washington. Despite approval of the design, All American has made no plans for production or marketing of the craft. Definite decision to confine these activities to a small scale has been made.

All American occupies a portion of the wartime Douglas Aircraft Co. plant at Long Beach, Calif., the majority of which has been leased by North American Aviation for B-45 jet bomber production.

Piper Aeronca Drop From Aircraft Council

Piper Aircraft Corp. and Aeronca Aircraft Corp. withdrew as dues paying members from the Personal Aircraft Council of the Aircraft Industries Association, at the recent meeting at Springfield, Ill. They will continue to send representatives as observers to meetings of the council, by vote of the other manufacturer members. Economic reasons were understood to be the cause for both withdrawals.

Dwane L. Wallace, president of Cessna Aircraft Company, Wichita, was elected chairman of the council, succeeding John Friedlander, Aeronca president, and William H. Klenke, Jr., general sales manager, Stinson division, Consolidated Vultee Aircraft Corp., Wayne, Mich., was elected vice chairman.

Wallace, 35-year-old graduate aeronautical engineer, has headed Cessna since 1933 and is a newphew of Clyde Cessna, founder of the company. Under his leadership Cessna won the Army-Navy E pennant five successive times for war production, principally of twin-engine trainers and utility cargo planes. Cessna is now a leading producer of personal two-place and four-place planes, having manufactured approximately 7,000 postwar personal aircraft.

Joseph T. Geuting, Jr., continues as manager for the council, and Don Ryan Mockler, as public relations director. Next meeting of the council is tentatively scheduled late in January at the Statler Hotel in Washington.

New Bell Dealer

Bell Aircraft Corp. has appointed A-F Helicopters of Burbank, Cal., as its dealer in Southern California counties. Previously operating as Armstrong-Flint Helicopter Co., the new dealer organization since last spring has flown its two helicopters approximately 1,000 hours, and currently is operating them nearly 250 hours per month. Officers of the firm include H. B. Armstrong, president; Knute W. Flint, general manager; A. L. Sumarlidason, sales manager, and Fred Bowen, chief pilot.

here's proof of SKYLAC economy

COATS NEEDED FOR FINISH OF 8 MILS

Because it covers in fewer coats, Skylac saves on labor and materials . . . cuts down "lay-up time" in the shop. Actual practice proves that in normal cold application, 5 or 6 coats of Skylac will provide a finished coating of 6 to 8 mils in thickness. Other finishes require many more coats to give the same thickness.

But economy is only one of the features of this versatile Monsanto aircraft finish. Here is the outstanding combination of superiorities that has made Skylac "standard equipment" on leading airlines:

1	Covers with fewer coats . . . requires less sanding . . . minimizes delays due to weather conditions.	5	Excellent hiding power and gloss with little chalking.
2	Adaptability to both interior and exterior surfaces.	6	Durability that outlasts ordinary finishes more than two to one.
3	Slow flame travel meets all C.A.A. requirements.	7	Color-fast pigmentation.
4	Excellent tautness unaffected by humidity.	8	Protected against mildew with a non-toxic, non-bleeding fungicide.

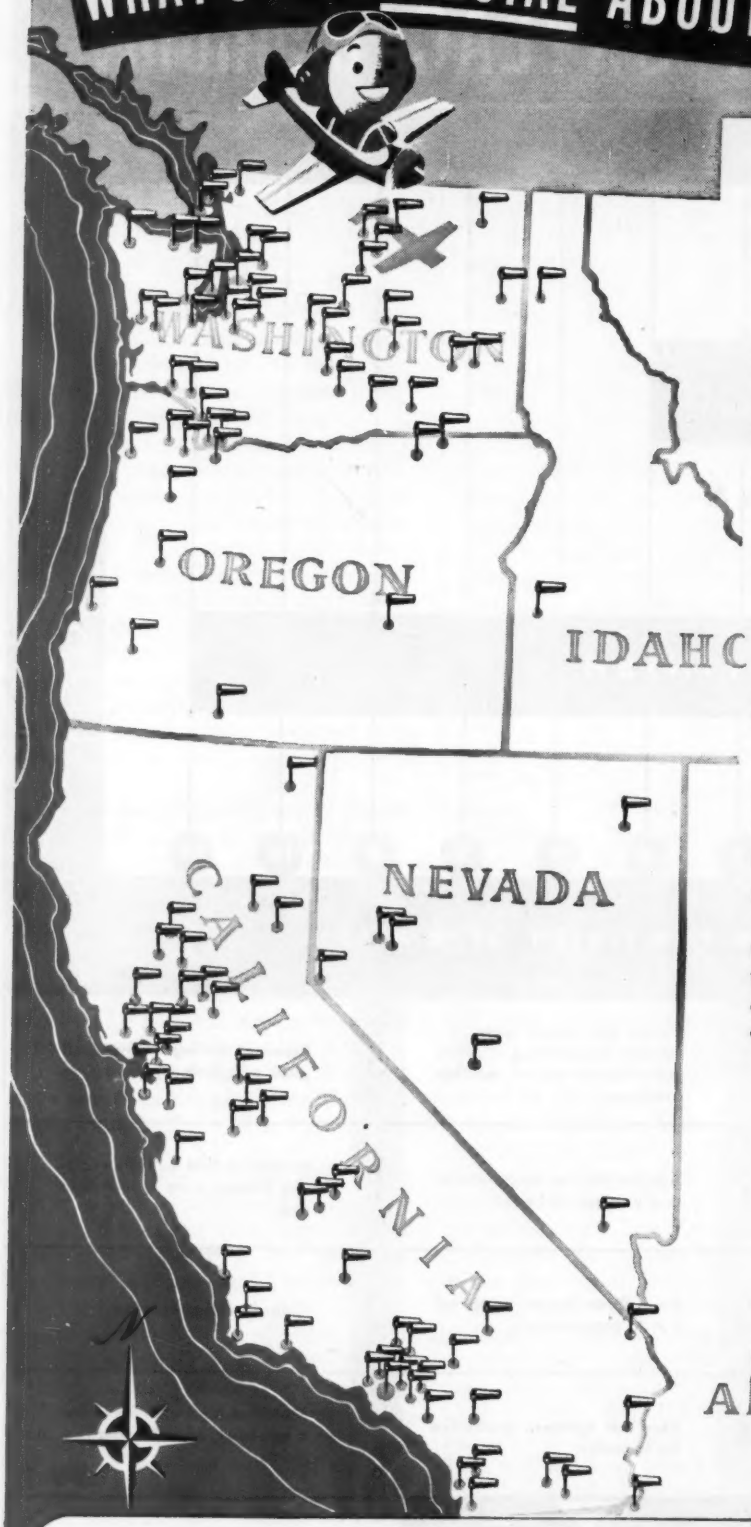
MONSANTO
CHEMICALS AND PLASTICS

For complete information and technical data on Skylac, address: MONSANTO CHEMICAL COMPANY, Merrimac Division, Boston 49, Mass.

Skylac: Reg. U. S. Pat. Off.

SERVING INDUSTRY...WHICH SERVES MANKIND

WHAT'S SO SPECIAL ABOUT THESE AIRPORTS?



Every one of these 158 Union Oil-served airports stands ready to give you a special brand of friendly service that's designed to please flying men.

Being air-minded ourselves, we have long felt the need for a carefully-worked-out plane servicing procedure—one that's thorough and systematic. Therefore we went to work on one. The result is that all Union-served airports are now offering a new and better brand of service that's bound to please you. Every detail has been carefully worked out with the flyer in mind. For example, our order check lists leave nothing to memory or chance—be it tire inflation or 100-hour check.

We're stocked with the finest line of aircraft fuels and lubricants you can buy—like 7600 Aviation Gasoline, Strona Aviation Greases and T5X Aero Oil.

We're loaded with information about hotel accommodations, transportation, where to eat, what to do and see in our localities. We'll be happy to give you helpful information on weather and mileage and directions to your next stop.

Taxi in and see us next time you're out cruising. We'll be ready with a cordial welcome—with the finest of service—and with an unbeatable line of Union aviation fuels, lubricants and flight accessories.

UNION OIL COMPANY
OF CALIFORNIA

76 UNION

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ARIZONA—Casa Grande, Coolidge, Gilbert, Glendale, Globe, Holbrook, Mesa, Phoenix(3), Prescott, St. Johns, Tucson(3), Wickenburg, Yuma.

CALIFORNIA—Alturas, Antioch, Arlington, Bakersfield, Bellflower, Blythe, Burbank, Calimesa, Calistoga, Corcoran, Coachella, Colusa, Del Mar, El Cajon, El Centro, El Monte, Elsinore, Fairfield-Suisun, Fresno, Hemet, Imperial, Lancaster, Livingston, Loma Linda, Lompoc, Long Beach (3), Los Angeles, Los Banos, Merced, Montebello, Morro Bay, Napa, National City, Needles, Nice, Oakdale, Oakland, Ontario, Palmdale (2), Quincy, Ramona, Rosemead, Sacramento, Salinas, Santa Ana, San Carlos, San Diego (2), San Francisco, San Jose (2), Santa Maria, San Marcos, Stockton, Vallejo, Van Nuys, Victorville, Visalia, Williams, Willows, Woodland.

NEVADA—Fallon(2), Minden, Las Vegas, Tonopah, Wells.

OREGON—Beaverton, Burns, Eugene, Hillsboro, Klamath Falls, North Bend, Pendleton, Riddle, Salem, Troutdale, Weston.

IDAHO—Boise, Coeur d'Alene (2).

WASHINGTON—Auburn, Bellevue, Bellingham, Bremerton, Camas, Chelan (2), Cle Elum, Colville, Ellensburg. Enumclaw, Everett, Forks, Friday Harbor, Hoquiam, Kennewick, Lacrosse, Longview (2), Montesano, Omak-Malott, Orcas Island, Olympia, Port Angeles, Port Orchard, Prosser, Puyallup, Renton, Seattle (5), Sequim, Shelton, Snohomish, Spokane (3), Tacoma (3), Toppenish, Twisp, Vancouver, Washtucna, Woodland, Wenatchee, Yakima (2).

HAWAII—Honolulu.

ALASKA—Anchorage (2), Fairbanks (2), Juneau (2).

Flint Demonstrates Landing Instrument

First public demonstration of the Flint landing instrument, a bomb-sight type touch-down point indicator, indicated its accuracy by repeatedly bringing an Aeronca Chief down to within 5 ft. of a ground marker from the start of the glide at 1,000 ft. The landings were made deadstick by Tudor Morris and an AVIATION WEEK observer at the Middletown, Ohio Airport.

Device was developed by Earl E. Flint, former Wright Field employee, who developed the wartime low-level bombsight used by the Air Force. The device operates on a reflector principle by projecting an orange dot of light on a glass screen. After feeding estimated wind velocity, gliding speed and airplane gross weight into the system, the orange dot is projected on the screen in a position indicating the point on the ground ahead for touchdown.

The tests were made by locating a cloth strip 10 yds. long and one yard wide in the middle of the field. The throttle was cut at 1,000 ft. with a two and one-half mile tail wind. Glide speed indicated 65 mph. and was held steady without sideslip or crabbing.

The landing instrument is now being manufactured commercially by the American Gage and Manufacturing Co., Dayton, Ohio. Prices for eight personal aircraft have been standardized: Aeronca Chief and Champion $245; Luscombe Silvaire $255; Ercoupe $273; Stinson Voyager and Station Wagon $325; Republic Seabee $425 and Beechcraft Bonanza $465. Installations have also been designed for Bellanca, Cessna, Culver, Funk, Navion, Piper, Rocket, Swift and Waco but prices have not yet been quoted. Variations in prices accommodate special mounting brackets required for each airplane type.

Alligator Reunion

Florida Flying Alligator Club international will hold its post-war reunion and initiation at Melbourne, Fla., on Jan. 7, 1948. This will be the thirteenth anniversary of the founding of the club, which now has over 2,000 life members throughout the United States, its possessions and Canada.

The Flying Alligator initiations and parties before the war attracted as many as 950 airplanes, largest private pilot gatherings in the U. S. These parties were usually held as a prelude and assembly point for pilots enroute to the Miami All American Air Maneuvers. Accommodations for the 2,000 members and initiates expected for the meeting are being arranged by Victor Robbins, manager, Melbourne Airport, Melbourne, Florida.

BRIEFING FOR DEALERS AND DISTRIBUTORS

WEATHER STUDY—Aero Insurance Underwriters, New York, is hopeful that it can make a prevaricator out of the sage who opined "everybody talks about the weather but nobody does anything about it." Engineering department of AIU, is sending out business reply postcards to a large list of pilots, to get back a comparison report on weather forecasts with actual weather encountered. Inaccuracy of weather forecasting has been the subject of pilot gripes for years, but as far as we know, this is the first time anybody has tried to run a check on the accuracy of the forecasters. AIU proposes to analyze reports received from pilots and then forward the tabulations to F. W. Reichelderfer, chief of the U. S. Weather Bureau, for his information and action. Report card provides space for pilot's name, address, model plane flown, forecasting station, period of forecast, flight route, weather bureau forecast, and actual weather encountered. If a large number of reports shows inaccuracy in any one station there might be some changes made in the forecasting in that locality.

GEMINI IMPORTS DELAYED—Imports of the twin-engine four-place British Miles Gemini planes to this country are being delayed pending study to learn exact costs of import duties, installation of the Continental 125 hp. engines expected to be used, and CAA airworthiness certification changes required, Smith Kirkpatrick, American importer for Miles aircraft has announced. Factory delivery schedules are being studied to determine availability of planes for U. S. delivery.

MIXED REACTION TO POWELL PLAN—A spot check with a few fixed base operators at the National Aviation Clinic and NATA meeting in Springfield, indicated a mixed reaction to the National Flight System plan headed by Dick Powell, Hollywood motion picture star. Meanwhile the plan is spreading rapidly in many cities in the east and middle west as well as on the west coast, and expects eventually to have 400 agencies throughout the country. Powell visited the Clinic and discussed agencies with a number of operators. Operators not signing up for the plan say that the final price charged the consumer for the ground school course plus eight hours of flight instruction quoted at $225, is out of line with what the student could get at in hours of flight instruction at most airports for the same money. Proponents of the plan including some highly respected business-men operators, feel that the cost of the plan may well be justified because of the sales effort expended in reaching prospects which ordinarily would not come out to the airport.

SPINS OBSOLETE, SAYS BEVO—Probably the most telling blow that was struck at the Springfield Clinic at the present CAA private pilot flight requirements, was that by soft-spoken Beverly Howard, NATA president, airport operator at Charleston, S. C., and international aerobatic champion. Howard told his fellow delegates that the spin is obsolete, and that there is no excuse for the maneuver in normal flying. "Bevo" spoke in support of a Clinic bill calling for modification of flight requirements, which was passed without serious objection, even from CAA. The bill stated among other things that spins, pylon eights and forced landings, should be eliminated from private pilot flight training, and pointed out that an airplane cannot spin until it stalls, and therefore students should be taught to recognize and recover from stalls. The fact that Howard probably knows from actual flight experience more about what an airplane will do than any delegate on the floor, made his condemnation of spins carry extra weight.

OPERATORS WOULD BUY UNCERTIFICATED PLANES—Art Curry, Galesburg, Ill. operator, and Howard, also raised some conservative eyebrows at the Clinic, particularly in the CAA corner when they informed the Clinic they would not hesitate to buy uncertificated personal planes, if they were backed by established manufacturers. Their testimony was followed by that of Bill Klenke, Stinson sales manager, who pointed out that it now costs around $3,500,000 to bring out a new airplane, and that any manufacturer who sinks that kind of money into a project, is not going to be irresponsible about his product. Jerry Lederer, insurance engineer, had previously indicated the danger of irresponsible manufacturers, and Floyd Evans, Michigan aeronautics director, told the Clinic "it has taken many years to get the mail-order planes out of the business, let's not get them back." The operators point that they regarded the manufacturer's warranty as equally satisfactory to a CAA certification probably was more influential than anything else in the final outcome of the debate. A revised bill presented by T. P. Wright, proposed that CAA allow manufacturers who conform to certain manufacturing standards, to certificate their own planes.

—ALEXANDER McSURELY

Winter Focusing Airline Interest On CAB Mail Pay Determinations

Revised basis of compensation likely; Board's own surveys expected to be controlling factor in establishing uniform mail payment method.

The airlines eagerly await results of the coming winter months on two fronts—weather and the Civil Aeronautics Board. A duplication of last year's adverse operations could very well prove fatal for a number of carriers. However, the greatest interest will probably be directed at the CAB where applications for increases in mail compensation are pending.

CAB will determine the extent of earnings that may be restored to the carriers. Except for American and Northwest, every airline has applied for more mail pay. Within six to nine months, the Board probably will have acted on all of these cases, and, some form of record will have been established in the Board's procedures on mail rate matters. The basis of mail payments to the carriers likely will be revised along with the establishment of streamlined procedures.

▶ **Three Classes**—For purposes of rate making, the Board developed three distinct classes among the airlines to recognize such basic differences as traffic density, length of haul, operational problems and other factors. The first group, American, Eastern, TWA and United, receives 45 cents a ton mile. The second group, Braniff, C & S, Delta, National, Northwest, PCA, and Western, received 60 cents a ton mile and have relatively less extensive route miles, lower traffic densities and lighter mail loads than the "Big Four". These two groups, before subsequent adjustments, were considered on a service rate providing compensation for transporting the mail without a subsidy.

The third group, Colonial, Continental, Mid-Continent and Northeast, were regarded as need carriers. Their non-mail revenues are at such low levels as to preclude a profitable operation without substantial mail pay. Compensation for this group has been on a straight plane mile basis without regard to the weight of mail carried. Of course, recently the feeder line has become established and has emerged as a new and important sub-class of need carrier.

▶ **Mail Pay Adjusted**—To help relieve the financial pressure on a number of carriers early this year, the CAB adjusted the mail pay of three of the 60 cent ton mile lines, C & S, PCA and Western, by introducing a minimum capacity factor starting at 700 lb. per plane mile. This merely introduced "false mail loads" and was designed to meet an emergency condition. Provision was made for gradual reduction of the minimum capacity factor to 250 pounds by the summer or fall of next year.

COMPARATIVE OPERATING RESULTS
Actual Mail Payments and Break Even Need
Domestic Airlines
For 1946 and first six months of 1947.

Carrier		Operating Loss	Actual Mail Payments	Break-Even Need
American	(A)	$318	$3,241	$3,559
	(B)	3,279	1,571	4,850
Braniff	(A)	176	422	598
	(B)	853	213	1,066
Chicago & Southern	(A)	1,136	1,143	2,279
	(B)	605	534	1,139
Colonial	(A)	442	533	975
	(B)	548	268	816
Continental	(A)	126	609	735
	(B)	323	306	629
Delta	(A)	142	456	598
	(B)	110*	213	103
Eastern	(A)	8,222*	1,405	x6,817
	(B)	3,519*	774	x2,745
Mid-Continent	(A)	442*	945	503
	(B)	107	469	576
National	(A)	972*	407	x565
	(B)	106*	187	81
Northeast	(A)	68	924	992
	(B)	785	319	1,104
Northwest	(A)	59	1,170	1,229
	(B)	2,147	612	2,759
PCA	(A)	2,933	338	3,271
	(B)	2,247	1,299	3,546
TWA	(A)	9,676	2,921	12,597
	(B)	3,414	1,593	5,007
United	(A)	976*	4,345	3,369
	(B)	4,878	1,943	6,821
Western	(A)	1,111	388	1,499
	(B)	315	603	918

Source:—Civil Aeronautics Board
Notes: (A) Full year 1946
(B) First six months of 1947
* Profit
x "Excess" mail pay

▶ **Vital Factor**—As the accompanying table shows, mail pay remains a vital factor in assuring profitable operations for the airlines. Operating losses for 1946 and the first six months of 1947 have been detailed along with the actual mail pay received. To these amounts have been computed the break-even need to wipe out existing operating deficits. It can be seen that such requirements are indeed substantial. Eastern, and National to a much lesser extent during 1946, are conspicuous by their complete independence of any mail compensation to assure profitable results. Despite its loss of about $900,000 during the third quarter, Eastern continues to show the ability to operate profitably on a cumulative basis without benefit of mail pay.

Another way of viewing the condition of the industry's earnings is to develop the period required to offset previous losses. The year 1945 was the best in the industry's history while 1946 was among the worst. Accordingly, assuming that earnings would return to the 1945 level, it would take from four and a half to five and a half years, in a number of instances, to recoup 1946 losses. The actual periods, on this basis, would be as follows:

Chicago & Southern	5.4 years
Colonial	4.5 years
PCA	5.6 years
TWA	4.6 years
Western	4.6 years

The problem would be intensified further by the heavy deficits incurred during the early periods of this year, thus increasing the time required for a successful recoupment.

▶ **CAB Surveys**—It is becoming increasingly evident that the airlines will be required to do more than file copies of their deficit reports with the CAB in order to obtain the desired increases in mail pay. The Board's own field survey teams have been dispatched to develop independent investigations, particularly of the need carriers. When the Board granted temporary mail pay increases to five domestic carriers earlier this year, it ordered an investigation of each company involved. The lines were required to file with the Board a self-analysis of route patterns, cost characteristics, operating and management practices and other vital factors. In summarizing the four reports submitted thus far, the Board termed them "self-serving documents". It is a fair surmise that the Board's own findings and analyses will be quite exhaustive and far more controlling in the final mail determinations.

The extent of mail pay increases awarded the separate carriers and the ultimate pattern established will be of key importance in the industry's development. Very much influenced will be the level of passenger fares and cargo tariffs. Of over-riding importance is the note of financial stability that may be attained. Once this is assured and earnings again are on the mend, it will be possible for the lines to embark upon a much needed financing program to acquire new and efficient equipment of all types.

—Selig Altschul

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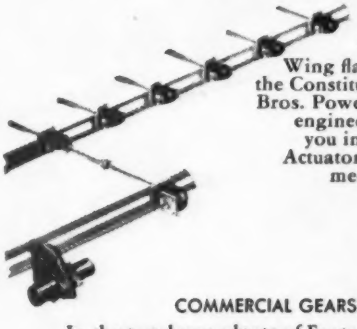

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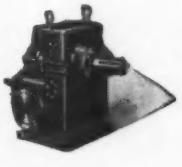

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Domestic Trunklines to Show Record Losses For Second Year

Operating deficit for nine months is $10,593,368 as passenger traffic falls under expectations; carriers pressing for mail pay relief.

With traffic far below expectations during the first nine months and last quarter operations certain to be affected severely by the DC-6 grounding, the 16 domestic trunklines are heading for record deficits for the second straight year.

Present indications are that last year's operating loss of about $5,500,000 will be at least doubled and possibly tripled this year. The domestic carriers' operating deficit during the first nine months of 1947 was $10,593,368, compared with a $4,064,705 operating profit in the same 1946 period.

▶ **Three Lines Show Profit**—On Sept. 30 of this year, 13 of the 16 domestic trunklines were in the red, the only exceptions being Eastern Air Lines, with a $2,972,289 operating profit, Inland Air Lines with a $134,030 profit, and Mid-Continent Airlines $202,934 in the black. Carriers with losses of more than $1,000,000 included American $1,169,209; PCA $2,010,386; TWA $3,115,844 and United $2,623,710.

Size of this year's fourth quarter deficit will depend almost entirely on November and December results. First five carriers to report for October showed four—Braniff, Chicago & Southern, Mid-Continent and PCA—with profits and Colonial with a slight loss. United and American expect to have profits in October, while National predicts a deficit.

▶ **Mail Pay Relief**—The domestic trunklines' big hope for relief from oppressive deficits lies in their pending petitions for more mail pay. Only American and Northwest are not seeking higher mail rates. Continental recently accepted a retroactive mail pay formula geared to its load factor (AVIATION WEEK, Nov. 24) and as a result is expected to show a profit in 1947.

A 10 percent fare increase instituted by Northwest Airlines in October and slated to go in effect on part or all of nine other trunkline systems before Christmas will have little bearing on 1947 earnings. TWA, United, PCA, Western, Inland, Chicago & Southern, Delta, Mid-Continent and Braniff are the other trunklines experimenting with the new 5.5 cents a mile passenger fare.

▶ **Traffic Gains Small**—Revenue passenger miles during the first three quarters of 1947 totaled 4,580,508,000 against 4,381,207,000 in the same 1946 period. The gain of less than five percent contrasts sharply with industry expectations of a 25-50 percent passenger traffic increase.

Among the larger carriers, American, Eastern and United showed passenger traffic gains over 1946, while Northwest, PCA and TWA reported declines.

▶ **International Operations**—U. S. flag carriers as a group made slightly better financial progress during the first nine months of 1947 than the domestic lines. American Overseas Airlines had a $1,516,746 operating loss to Sept. 30, TWA's international division had a $625,765 operating deficit, and Northwest's service to Alaska and the Orient was $116,957 in the red.

By contrast, Pan American Airways had a consolidated net operating income of $3,969,340 for the nine months. This included a $2,263,000 profit on Atlantic services, $2,127,000 profit on Pacific services, $181,000 profit on Alaskan services and a $604,000 loss on the Latin American division. In the same 1946 period, PAA had consolidated operating profit of $11,628,000, and all four divisions were in the black.

▶ **CAB Action Helps**—Profits on PAA's Atlantic division will be increased sharply, and deficits suffered by TWA's international division and American Overseas Airlines during the first nine months of this year will be decreased or wiped out altogether as the result of recent CAB action. The board last month gave the three carriers an aggregate of $6,585,000 in additional mail pay for trans-Atlantic services performed between Jan. 1, 1946, and June 30, 1947.

Feeder operators also have benefited materially from recent CAB mail pay decisions. Pioneer Air Lines, whose mail pay is now hitched directly to its load factor, reported $111,673 operating profit in the first nine months of 1947.

▶ **Feeder Formula Set**—A CAB order in October boosted the mail pay of six local carriers—Empire, Monarch, Southwest, West Coast, Florida and Challenger—from 35 cents a plane mile to 60 cents a plane mile for approximately the first six months of their respective services. The rate drops to 55 cents a plane mile during the succeeding three months and declines 5 cents more each three-month period thereafter until about 18 months after inauguration of service each carrier's mail pay becomes 35 cents a mile.

As a result of the formula, West Coast Airlines, which had an $86,000

Domestic Airline Revenue and Traffic

First Nine Months of 1947 & 1946

(Scheduled Operations Only)

Carrier	Net Revenue from Operations 1947	1946	Revenue Passenger Miles* 1947	1946
American	$(1,169,209)**	$1,090,319	1,058,699,000	918,496,000
Braniff	(921,240)	(91,515)	148,799,000	157,318,000
Chicago & Southern	(637,446)	(1,047,409)	83,550,000	104,891,000
Colonial	(715,080)	(344,328)	29,302,000	35,237,000
Continental	(311,675)	77,274	45,271,000	59,159,000
Delta	(245,364)	171,392	154,921,000	152,377,000
Eastern	2,972,289	6,136,317	650,695,000	564,171,000
Inland	134,030	(3,562)	21,551,000	17,207,000
Mid-Continent	202,934	424,303	62,060,000	56,185,000
National	(488,427)	826,378	123,755,000	122,993,000
Northeast	(888,987)	(109,464)	48,294,000	61,538,000
Northwest	(774,220)	1,198,523	272,176,000	283,503,000
Penn-Central	(2,010,386)	(1,691,624)	220,250,000	284,027,000
TWA	(3,115,844)	(5,705,630)	602,419,000	622,901,000
United	(2,623,710)	3,412,332	919,707,000	800,412,000
Western	(1,033)	(278,601)	139,059,000	140,793,000
Totals	(10,593,368)	4,064,705	4,580,508,000	4,381,207,000

* Over continental U. S. routes only. ** Parentheses indicate loss.

loss on June 30, reported a $38,473 profit for the nine months ended Sept. 30. Monarch Air Lines, which had a $355,959 operating loss on Sept. 30, received $182,649 in back mail pay on Oct. 20.

▶ **Deficits Cut**—Empire Air Lines, $208,000 in the red on June 30, was able to reduce its deficit to $96,000 on Sept. 30. Back mail pay cut Florida Airways' June 30 deficit of $118,000 to $57,000 on Sept. 30 and chopped Challenger Airlines' June 30 deficit of $60,000 to $38,000 on Sept. 30. By contrast, the deficit of Southwest Airways, which had not yet figured in its back mail pay, climbed from $444,000 on June 30 to a total of $616,000 on Sept. 30.

Feeders still depend on mail pay for the major part of their revenue. During the nine months ended Sept. 30, Pioneer's mail income aggregated $752,000 and its passenger revenue $541,000. Florida Airways' mail revenue in the same period was $275,000 and its passenger revenue $31,931. On the four major trunklines, passenger revenues this year have exceeded mail income by as much as 30 to 1.

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Damon Estimates Equipment Market

AA president sees transport orders totaling $100,000,000 annually.

U. S. air carriers, both domestic and international, probably will be in the market for between $100,000,000 and $125,000,000 worth of commercial transports annually during the next five years in the opinion of Ralph S. Damon, president of American Airlines.

Testifying before the President's Air Policy Commission, Damon estimated that as of Jan. 1, 1948, U. S. commercial airlines will have about $250,000,000 worth of flying equipment on order and undelivered. Additional planes costing between $250,000,000 and $490,000,000 will be ordered for delivery by the end of 1952, according to Damon, making total commercial plane purchases for the 1948-1952 period of from $500,000,000 to $740,000,000.

▶ **Factors Noted**—He emphasized that his studies were based on many assumptions regarding the country's economic health during the period up to Dec. 31, 1952, the growth of passenger airline business and airfreight, and the ability of the carriers to finance or obtain credit for new equipment. The American Airlines executive also pointed out that commercial business during the next five years will not constitute an even flow "either timewise or manufacturewise."

Damon said the $100,000,000 to $125,000,000 worth of business furnished annually by the airlines could be deducted from the total of $750,000,000 in yearly orders which will be necessary to keep the U. S. aircraft manufacturing industry strong. He told the Policy Commission that the U. S., in the interest of national defense, should not permit major airframe plants—now numbering 14 or 15—to be reduced below ten.

▶ **Needs Listed**—To remain solvent and do a reasonable amount of development work, each of these 10 airframe companies should have orders of not less than $30,000,000 annually (including both military and commercial business), according to Damon. Firms engaged in the manufacture of engines, accessories, propellers, instruments and other units also should have annual orders aggregating $300,000,000, he declared.

Expense to the government of administering contracts and financing aviation laboratories or agencies probably will cost another $120,000,000 to $150,000,000 annually, Damon estimated, bringing to $750,000,000 the total sum necessary to support the aircraft manufacturing industry each year.

CAB Probes Alaskan Mishaps

Board proposes exemption for all-cargo lines flying from U. S. to territory.

Two fatal accidents involving Alaskan air carriers and a CAB proposal to grant exemptions to all-cargo lines operating between continental U. S. and Alaska focused attention on the territory's air transportation picture early this month.

CAA inspectors are investigating recent crashes involving an Alaska Airlines DC-4 at Seattle-Tacoma Municipal Airport and a Columbia Air Cargo Co. DC-3 at Yakutat, Alaska. Alaska Airlines is certificated within Alaska and operates nonscheduled and under charter to the U. S., while Columbia Air Cargo, based at Portland, Ore., is uncertificated and provides contract and nonscheduled service from the Pacific northwest to Alaska.

▶ **Court Action**—Last month, Alaska Airlines was accused by Pacific Northern Airlines, Anchorage, of operating on schedule between Alaska and Seattle in violation of the Civil Aeronautics Act (AVIATION WEEK, Nov. 17). The complaint is still pending in Alaskan Federal Court.

Immediately following the Alaska Airlines accident, CAB cited the company for operating scheduled common carrier services between Alaska and the U. S. contrary to provisions of the Civil Aeronautics Act. The company by Dec. 15 must show cause why it should not be ordered to cease and desist from transporting persons between points not on its certificated routes. (CAB had prepared the order prior to the accident.)

▶ **Overshoots Runway**—The Alaska Airlines DC-4 overshot the runway at Seattle-Tacoma Airport and crashed into an automobile on an adjacent highway, where it burned. Five passengers and the hostess were killed along with one occupant of the automobile. Twenty-three persons aboard the plane were injured.

Bound from Anchorage to Seattle, the DC-4 pilot had previously made attempts to land at Boeing Field, Seattle, and Payne Field, Everett, Wash., but was unsuccessful because of bad weather. The accident was the first involving an Alaska Airlines transport since the company's incorporation over 10 years ago.

▶ **Second Mishap**—All 11 passengers and the two-man crew of the Columbia Air Cargo DC-3 were killed in the Yakutat mishap. The flight had originated at Anchorage and was bound for Seattle and Portland. The crash occurred during a night approach to the Yakutat Airport.

Meanwhile, CAB has taken steps to promulgate a new section 292.7 of the Economic Regulations which would grant all-cargo operators on the Alaskan run the same common carrier privileges obtained under section 292.5 during the past six months by 11 other companies. (Pacific Overseas Airlines, Ontario, Calif., last month became the 11th carrier to receive a letter of registration under 292.5, and Trans-Air Hawaii, Honolulu, apparently will receive a letter shortly.)

▶ **More Service Needed**—None of the operators on the Alaskan run have been able to qualify for a letter under 292.5. In proposing section 292.7, CAB observed that there is need for a greater volume of air cargo transportation between continental U. S. and Alaska, adding that companies presently certificated for this service (Pan American and Northwest) apparently are unable to satisfy the demand.

Dozens of uncertificated carriers have been flying on a nonscheduled or contract basis between the Pacific Northwest and Alaska in the post-war period, their numbers reaching record proportions during several shipping strikes. CAB now plans to permit these companies to conduct scheduled common carrier freight service pending determination of the applications for certificates of public convenience and necessity which 292.7 operators must file within 30 days after the new regulation is promulgated.

▶ **Eligible Carriers**—The exemption would extend to two groups of airlines—the 11 Alaskan air carriers who now hold certificates to operate within the territory; and all other authorized carriers, certificated or uncertificated, which operated at least six round trips between continental U. S. and Alaska during the period from Aug. 1, 1947, to Oct. 31, 1947.

Some of the carriers certificated within Alaska (such as Alaska Airlines) currently operate supposedly irregular passenger and cargo flights to the U. S. The rest of the companies which may qualify under section 292.7 have operated nonscheduled or under contract with both passengers and freight.

▶ **Provisions Given**—Service operated under 292.7 would be limited to that provided between points specified in the carrier's application for a certificate. If and when the certificate application of an individual company is denied, the exemption privilege for that carrier under 292.7 also will cease.

A certificated carrier taking advantage of the exemption would be required to keep its records in such a manner that the costs and revenues of the air cargo service may readily be ascertained in a mail rate proceeding. Any carrier electing to take advantage of the proposed regulation must relinquish the right to carry passengers between points in the cargo service.

▶ **Problem Posed**—The latter provision will pose a serious problem inasmuch as the great bulk of cargo business between the U. S. and Alaska is northbound. To break even, most of the operators have found it necessary to carry passengers at least one way.

Red Influence Seen In Communications Union

Charges of Communist influence in the CIO's American Communications Association flared up last week when Robert L. Abel, chief radio operator for Capital Airlines (PCA) accused the union of "Slavish adherence to the Communist party line."

Abel made the charge in resigning as chairman of local 82, Air Line Communications Employees' Assn., which is affiliated with ACA. In a letter to Joseph P. Selly, ACA president, he said: "The charge that ACA is a Communistic organization has been too insistent to be forever ignored."

A spokesman for the ACA airlines department said half of local 82's 180 members had petitioned for Abel's removal and that the Communist issue has nothing to do with his resignation.

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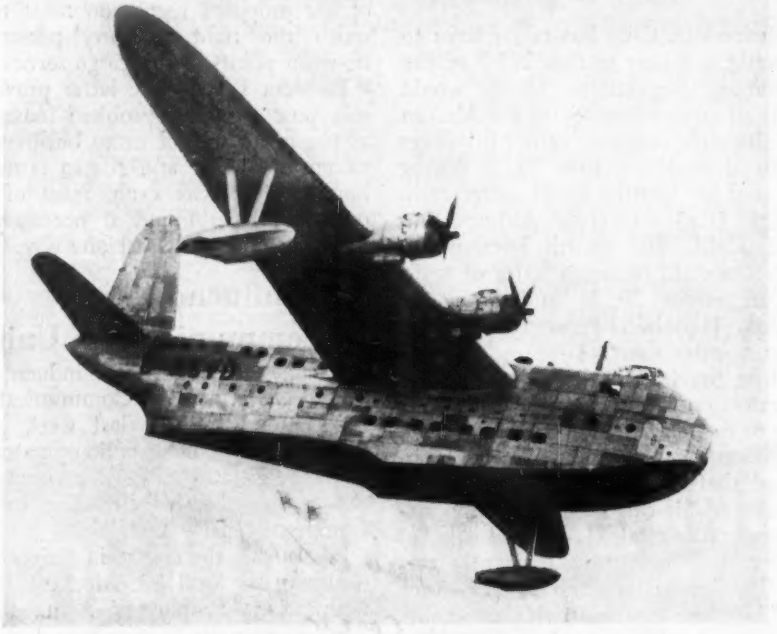

SARO TRANSPORT MAKES FIRST FLIGHT

Largest British flying boat, the Short Saro Shetland, during its maiden flight. Craft has a wing span of 150 ft., a hull length of 110 ft. and its gross weight is 130,000 lb. Cruising range is 4,650 mi. at a speed of 184 mph. Accommodation is provided for 70 passengers and a crew of 11.

Harriman Sees Need For Cargo Growth

A plea for quick development of the air cargo field and a call for Commerce Department participation in molding the domestic airline route pattern have been voiced by Secretary of Commerce W. Averell Harriman.

Harriman told the President's Air Policy Commission that full development of air cargo potential offers the greatest possibility for achieving the full benefits of aviation in its broadest sense. These benefits, he said, include: expansion and ultimate self-sufficiency of the air transportation system; natural stimulation and support of the aircraft manufacturing industry; and the general increase in business tempo as a whole which comes with better transportation service.

▶ **Development Costs**—The Commerce secretary declared it is a government responsibility to finance the development of new transport planes, both passenger and cargo. He recommended that funds for research and development of new types of commercial planes be handled under the general direction of the Commerce Department. Design requirements would be suggested by a subcommittee of the air coordinating committee in cooperation with representatives of the aviation industry.

The habit and method of subsidizing airlines should be examined critically to see if there is not a dulling of incentive resulting from CAB's policy of fixing mail pay on a backward instead of forward basis, Harriman declared. He emphasized that the "cost-plus" idea should not be permitted to get a foothold in air transportation.

In stating that his agency should be given more voice in establishing air policy, Harriman noted that either CAB or the Commerce Department should make a continuous study of air transportation potential. He declared that CAB may have certificated too many U. S. flag lines overseas, but added that domestically the board should not be too rigid in regulating the development of new cargo operations.

Kansas City-Memphis Service Suspended

Chicago & Southern Air Lines' authorization to operate a new link between Kansas City, Mo., and Memphis route to C&S on Sept. 30 in the been withdrawn by CAB. The action came only three days before the carrier was slated to begin service.

CAB granted the Kansas City-Memphis route to C&S on Sept. 30 in the Kansas City-Memphis-Florida case. The Board's recent action suspends Chicago & Southern's amended certificate pending reargument and reconsideration of the entire proceeding in the light of additional evidence.

ICAO Fails to Draft Multilateral Pact

Attempts to draft a multilateral civil aviation agreement at the 29-nation conference of the International Civil Aviation Organization in Geneva, Switzerland, have broken down, and Garrison Norton, chairman of the U.S. delegation, said the executive committee has abandoned work on such a pact.

The Geneva conference split over the question of "fifth freedom" traffic (the right of an airline to carry passengers between two countries other than its own nation). Great Britain, the U.S., the Netherlands, France, Sweden and several other nations declared themselves unwilling to accept clauses favored by the majority which limited "fifth freedom" rights.

Voting for a Mexican resolution curtailing "fifth freedom" privileges were Australia, Canada, Colombia, Egypt, Portugal, Venezuela, Turkey, New Zealand, Mexico, Italy, India, Greece and Brazil. Chairman Norton of the U.S. delegation suggested that the matter of a multilateral civil aviation agreement be shelved while the nations gain more international experience.

Airfreighters, Truckers Plan Service Pattern

Representatives of the Independent Airfreight Association and the American Trucking Association have agreed to cooperate in the interchange of air cargo with surface motor carriers. The two groups plan to develop a pattern of package delivery with local drayage concerns which will permit the all-cargo lines to extend their services to practically all points in the U. S.

IAA also announced that Meteor Air Transport, Teterboro, N. J., and the commercial air cargo division of Leach Aero Service, Hartford, Mich., have been admitted to the association.

Penalty Abandoned

The 25 percent penalty on "no show" passengers who fail to cancel their tickets before flight time has been abandoned by most of the certificated carriers. The levy was adopted by the industry in October, 1946.

American Airlines discontinued the penalty last April, while Braniff, Challenger, Northeast, PCA, Southwest and TWA followed suit in November. Mid-Continent, United, Western and Inland plan to remove the penalty this month.

PCA Names Murchison To Head Committee

Charles Murchison, general counsel of Capital Airlines (PCA) for several years, has been elected chairman of the executive committee of the carrier's board of directors.

In his new position, Murchison will be actively associated with Capital's President James H. Carmichael in the administrative functions of the company. First elected to the board of directors in October, Murchison will continue to act as general counsel.

Other personnel developments:

American—Richard J. Dina has been named international cargo sales representative in New York and will specialize in the development of business from international airfreight forwarders.

Florida Airways—John L. Rhodes has become director of public relations.

National—William B. Caldwell, Jr., has been appointed manager of tariffs and schedules. He succeeds George P. Dane, who resigned.

Northwest—Shreve M. Archer, former president and chairman of the board of NWA, died last month. He was 59.

Pan American—Capt. Harold E. Gray has been appointed division manager of the Pacific-Alaska Division . . . . Robert M. Burnett has become airport traffic superintendent at LaGuardia Field . . . . J. V. Roscoe has been named assistant to Howard B. Dean, PAA's administrative vice president.

Robinson Airlines—Keith Davis has become general manager with headquarters in Ithaca, N. Y.

Sabena—M. Curtiss Fillmore, formerly with Douglas Aircraft Co., is now in charge of the Belgian carrier's maintenance and procurement department on the U.S. East Coast.

Empire Buys DC-3s

Empire Air Lines, Boise, Ida., has purchased four DC-3s and plans to place them in service about Jan. 15. The tri-state feeder operator will continue to use its present fleet of Boeing 247-Ds in conjunction with the DC-3s.

CAB SCHEDULE

Dec. 8—Oral argument before CAB on proposed classification, exemption and regulation of freight forwarders. (New section 292.6 of Economic Regulations.)

Dec. 10—Prehearing conference on New York Area Helicopter case. (Docket 946 et al.)

Dec. 15—Hearing on PCA's application for unrestricted service from Chicago to Cleveland, Akron, Youngstown and Pittsburgh. (Dockets 1789 and 1790.)

Jan. 5—Hearing on Mid-Continent's application for alternate Kansas City-New Orleans route. (Docket 1956.)

Jan. 5—Hearing on Board's investigation of Consolidated Airfreight Tariff Agreement. (Docket 2719.)

Jan. 6—Hearing on Taca, S. A., foreign air carrier permit renewal and amendment case. (Dockets 3016 and 3017.)

Jan. 15—Hearing on requests of Braniff and Chicago & Southern for removal of restrictions on Chicago-Houston service. (Dockets 1681 and 1798.)

Feb. 4—Hearing on Continental Air Lines' route consolidation case. (Docket 576 et al.)

Feb. 16—Hearing on Mid-Continent's St. Louis-Twin Cities route case. (Docket 1050.)

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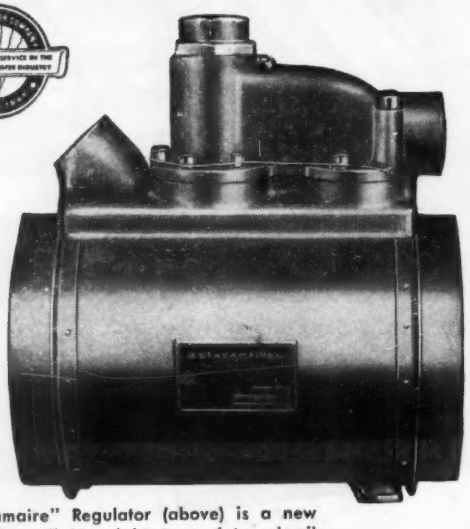
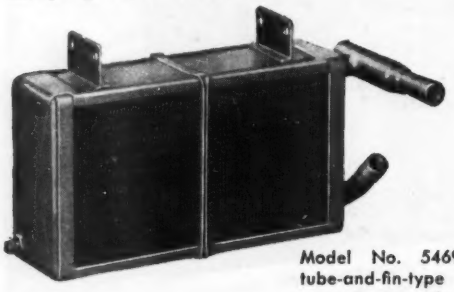
OIL TEMPERATURE REGULATORS

FOR PERSONAL AIRPLANES



"Streamaire" Regulator (above) is a new jacketless, light-weight type. Internal oil passages provide anti-congealing, warm-up performance. Equipped with thermostatic control and relief valve. Available in 4" to 9" diameters and with 15 or 30 lb. spring loaded relief valve.



Model No. 54692, rectangular tube-and-fin-type oil cooler for separate mounting.

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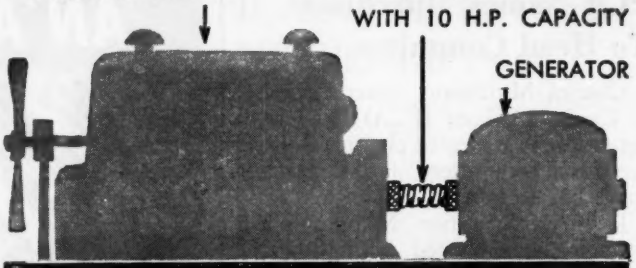

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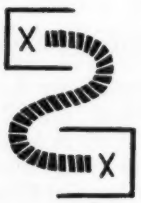

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FLEXIBLE SHAFTING

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Santa Fe Skyway Sued By Two Airfreight Lines

Santa Fe Skyway, Inc., and its parent company, Atchison, Topeka and Santa Fe Railroad, have been charged with operating in violation of the Civil Aeronautics Act by Flying Tiger Line and California Eastern Airways.

The two independent airfreight lines, which last summer became common carriers under Section 292.5 of CAB's Economic Regulations, have asked the U. S. District Court in Los Angeles to restrain Santa Fe from further violations. They allege that Santa Fe is operating as a common carrier without legal authority and that contracts signed with shippers are a blind to permit the railroad subsidiary to fly regular schedules in direct competition with all-cargo lines duly registered with CAB.

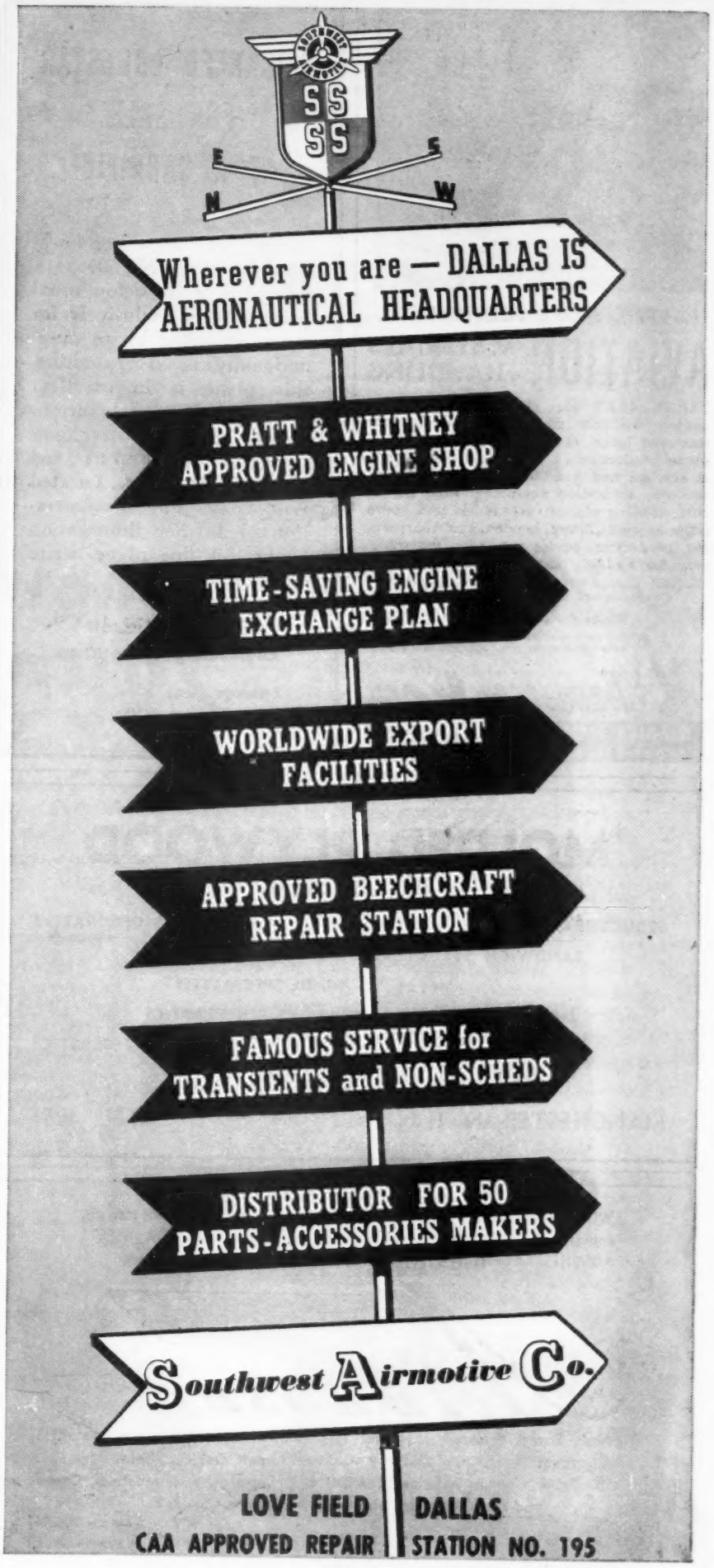
Santa Fe's application to operate as a common carrier under Section 292.5 is still pending before CAB. The company flies transcontinentally with DC-4s and DC-3s and states it is a contract carrier.

CAB Simplifies Rules For New Appliances

An intensive simplification of the certification procedure for aircraft materials, parts, processes and appliances has been announced by the Civil Aeronautics Board. Previous regulations have required the submission of detailed data on each appliance including modifications and examination and approval by the Administrator of Civil Aeronautics. This process has proved complex and time-taking.

New regulation requires only that the manufacturer certify that his appliance conforms with a "technical standard order" issued to cover the particular type of article being manufactured. The new policy amends Parts 03, 04A, 04B and 06 as follows:

"Materials, parts, processes and appliances shall be approved upon a basis and in a manner found necessary by the Administrator to implement the pertinent provisions of the Civil Air Regulations. The Administrator may adopt and publish such specifications as he finds necessary to administer this regulation and shall incorporate therein such portions of the aviation industry, federal and military specifications respecting such materials, parts, processes and appliances as he finds appropriate. Any material, part, process or appliance shall be deemed to have met the requirements for approval when it meets the pertinent specifications adopted by the Administrator and the manufacturer so certifies in a manner prescribed by the Administrator."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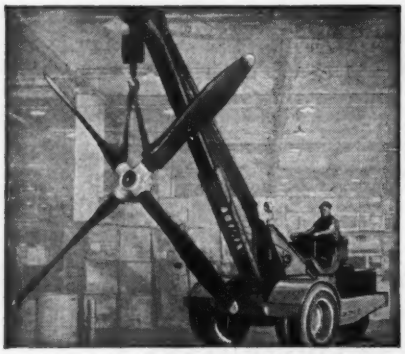

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Expanded PAA Shops At Miama Considered

Efforts to make Miami, Fla., the main engine overhaul center for the entire Pan American Airways system were disclosed last month when the Dade County Port Authority instructed its attorney to apply to the War Assets Administration for property which would be leased to PAA.

Utilizing buildings of the former Miami Air Depot adjoining International Airport, the shops would employ an additional 750 workers and increase PAA's Miami payroll by about $3,000,000 annually.

Pan American currently has engine overhaul shops at New York and at the Pratt & Whitney plant at East Hartford, Conn. If the Miami site is turned over to the port authority, a lease on an equitable basis must be worked out with PAA in competition with offers from the two alternate locations in the east.

New Safety Bureau Posts Created by CAB

Separation of authority in CAB's safety bureau was achieved recently when the Board created two new positions of assistant bureau director. Supervision of safety regulation will be the direct responsibility of one of the new assistant directors, while the other will have charge of accident investigation and analysis.

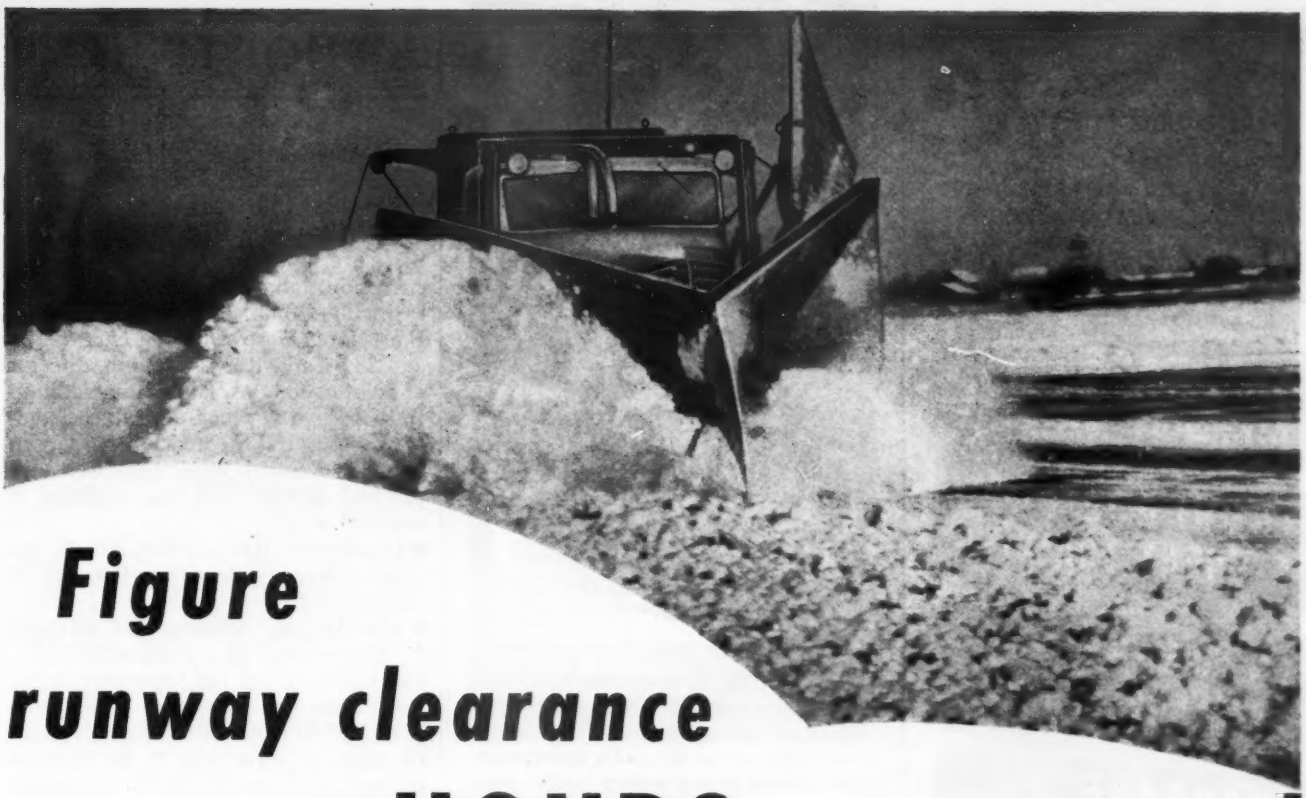
John M. Chamberlain, who has been acting director of the safety bureau since the resignation of Wallace S. Dawson last July, was designated assistant director in charge of the existing safety rules and international standards divisions. CAB named William K. Andrews, presently assistant chief of the accident investigation division, as the other assistant director with supervision over the existing accident investigation and accident analysis divisions.

The new assistant director of the safety bureau will report directly to the Civil Aeronautics Board while the position of safety bureau director remains vacant.

Traffic Low on Bermuda Run, Colonial Reports

Traffic on Colonial Airlines' new routes between New York and Bermuda and Washington and Bermuda has failed to come up to expectations since service was inaugurated Aug. 1.

Between Aug. 1 and Oct. 31, load factors on the two links averaged only 25 percent, although a pickup can be expected with the winter tourist season. The carrier suffered a net operating loss of $113,355 during the first two months of service.



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WHEN 2 or 3 inches of snow have fallen, put fast-clearing Walter Snow Fighters to work and there's no blizzard can cripple your airport. A giant 250 hp. Walter Snow Fighter —or several powerful 185 hp. models in echelon— will keep ahead of any storm. For example, a 150 ft. width on a mile long runway is cleared in three round trips, in approximately 15 minutes. Complete runway is cleared in less than one hour.

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● **Take off the plows and your Walter Snow Fighters become the most powerful, 100%-traction trucks for maintenance, repair and construction jobs. Having positive traction in all four driving wheels, they are unequalled for heavy hauling and difficult running conditions, on or off the roads and runways.**

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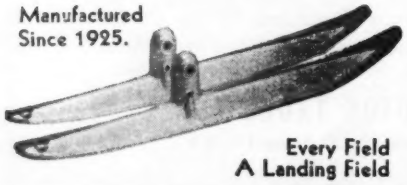

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SHORTLINES

▶ **All American**—Robert M. Love, president, has become the company's largest stockholder with acquisition of 86,345 common shares from A. Felix du Pont, Sr. Love now owns over 17 percent of AAA's outstanding common stock.

▶ **Braniff**—Completed 17 flight operations through use of ILS on Nov. 21, 22 and 23. Capt. R. V. Carleton, director of flight operations, said that in addition to these flights, which prior to the company's use of ILS could not have been completed, many other trips were dispatched because ILS was available if required.

▶ **Challenger**—Has asked CAB to extend its feeder system from Riverton to Casper, Wyo.

▶ **Los Angeles Airways**—Has accepted CAB's proposed $1 a plane mile temporary mail rate for the helicopter operation. Rate is to be applied to not more than 22,000 plane miles monthly, with 60 cents a plane mile to be paid on mileage in excess of 22,000. Company had requested $1.15 a plane mile. . . . During October, LAA's first month of operation, the carrier handled 60,360 lb. of mail and flew 9,801 revenue miles. . . . Service to San Fernando and Colton, Cal., is to begin this month.

▶ **Mid-Continent**—Net profit for October was $27,657 against $16,127 in October, 1946. Revenue passenger miles increased from 7,144,937 in October, 1946, to 8,187,966 in the same month this year, but passenger load factor dropped from 70.10 to 62.89 percent. . . . Company has taken over the Naval Research hangar at Wold-Chamberlain Airport, Minneapolis. The hangar, with 39,400 sq. ft. of floor space, will house MCA's airframe overhaul, engineering and radio overhaul departments. Mid-Continent overhauls and maintains its entire fleet of 15 DC-3s at Wold-Chamberlain.

▶ **Southwest**—Plans to move its headquarters and general offices from Los Angeles to San Francisco by the end of the year.

▶ **Trans-Canada**—H. J. Symington, president of TCA since 1941, has resigned but will continue to serve as a company director.

▶ **Trans-Texas Airways**—Hopes to extend its feeder system from San Antonio to Uvalde and Eagle Pass, Tex., around Dec. 15. Company's first links were activated in October.

▶ **TWA**—Has made radio-telegraph service available at all times to passengers on flights between the U. S. and Paris and London. . . . Company has inaugurated service to Wilmington, Del., and Allentown-Bethlehem, Pa.

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WANTED—A Freight Traffic man capable of assembling and analysing air freight tariffs for air freight operating lines: State Traffic experience in surface and air transportation and salary to start. P-3127, Aviation Week.

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For Sale, Stearman PT-17
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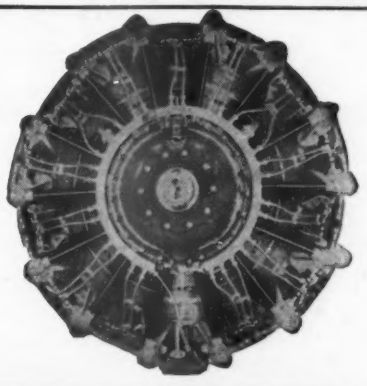

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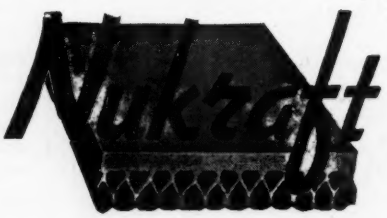

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Nukraft—available with or without foam rubber topper pads—is the miracle cushioning that adds extra comfort—extra life—to seating. It can be precut to any size or shape, if desired, and can be sewed, tacked, or tied into position. Best of all, its use is economical. Write today—find out how fly-light Nukraft can help you.

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EDITORIAL

A Sound Air Program

The U. S. Air Force's proposal of 70 groups totaling 6,869 aircraft, backed by a reserve of 5,572 active reserve and 2,528 storage planes, is a sound program for rebuilding American military air power.

This program has been an Air Force goal for nearly two years and the fact that Secretary Symington and Gen. Vandenberg revealed it in such detail at a public Air Policy Commission hearing is an indication of the urgency of the situation.

Obviously, they feel that the need for arousing the public to the necessity of this program outweighs the usual caution exercised for security purposes.

Considerable evidence of post-war thought is apparent. We are not following the French into the pitfall of building an air force for the next war to meet strategic and tactical demands of the last one.

The annual production rate of 3,200 planes a year, with an annual shift of planes from first line to reserve, then to the scrap heap, insures a modern air force. The average plane will be in first line service only five years.

Mr. Symington points out significantly that there is no need for subsidy for the aircraft industry, since Air Force minimum needs are more than the industry has indicated it needs to stay alive and healthy.

This program will be expensive. But it will cost no more than universal military training which, in the words of the War Department's chief propagandist, Lieut. Gen. Raymond McLain, will not in 20 years produce a single division ready for combat.

Money spent on the 70-group Air Force is financing a national life insurance policy. Rebuilding U. S. air power must have top priority in our national defense scheme. With this program we have the assurance of Mr. Symington that we can produce a professional Air Force second to none in less than five years.

It has been said before on this page that since long before World War II the Congress has lagged behind the demands of the people for a powerful Air Force. In recent months there has been a stronger tide of public opinion for rebuilding our air power. It is inconceivable that the Congress can ignore any longer the rising will of the people.

Crepe Hangers & Lightplanes

Professional crepe-hangers to the contrary, the personal plane industry will wind up 1947 with a total business—in units as well as in dollars—more than 100 percent greater than its best pre-war year.

Although this sales record of about 16,500 units will fall short of many prognostications, we cannot forget that fantastic predictions of millions of post-war flying flivvers did not originate with the personal aircraft industry.

We recall, for example, that several popular national magazines made "surveys" of the potential market, and came up with statistics out of all line with the facts. Even the widely-quoted predictions of former Commerce Air Secretary William A. M. Burden and CAA Administrator T. P. Wright were never sanctioned by industry.

The realistic approach to the development of a sound sales program has changed the aspect of personal flying. Planes now are being sold to individuals and business concerns who not only can afford the initial price and operation costs, but who have definite, proven need for such aircraft in the normal conduct of their business or personal affairs.

Sales of aircraft to irresponsible youngsters, regardless of their flying enthusiasm, no longer constitutes the industry's market. This is all to the good.

This week Dwane L. Wallace, Cessna's president and newly-elected chairman of the Personal Aircraft Council, will meet in Wichita to lay out the Council's program for 1948. The industry is fortunate in having Wallace as their leader and spokesman in the coming year. Young—thirty-five—and capable, an experienced engineer and executive, he has headed Cessna for the past 15 years. His company has enjoyed continued black-inked financial statements.

With his leadership, and an earnest effort by the industry to produce more efficient aircraft in line with the newest research lessons, the Personal Aircraft Council represents the logical spearhead of a sound campaign for the substantial, sensible growth of personal aircraft usage.

ROBERT H. WOOD

The plane . . .

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This 2-place side-by-side low wing cantilever monoplane of all-metal construction is designed for the private pilot who must get in and out of comparatively small airports and still have at his disposal sufficient cruising speed to make good time cross-country. Cabin windows and windshields of "Lucite" acrylic resin provide excellent vision.

SOME OF THE OTHER USERS OF "LUCITE"

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Globe "Swift"

Republic "Seabee"

The enclosure . . .

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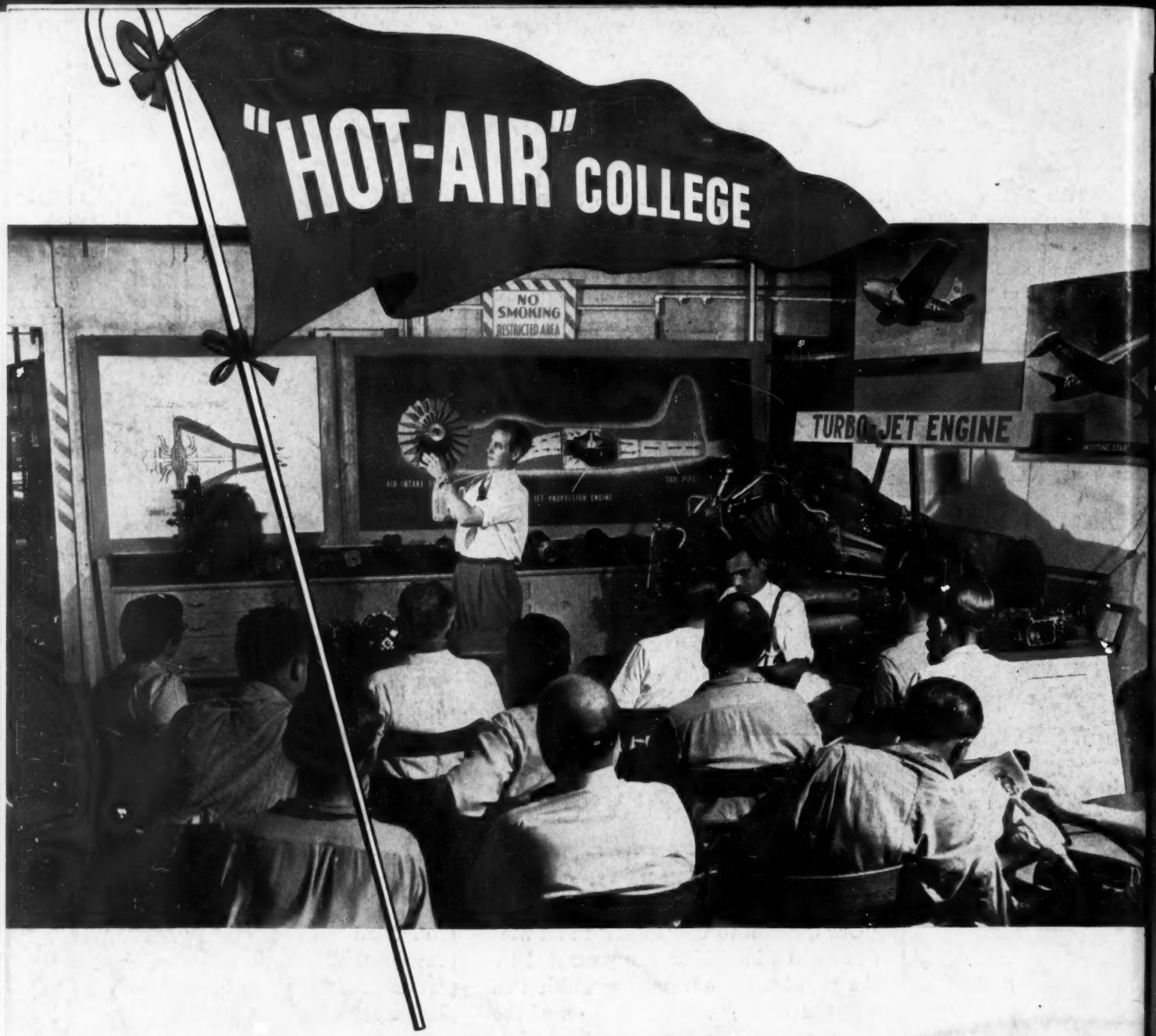

Here, teacher demonstrates a compressor wheel at General Electric's Aircraft Gas Turbine Training school. Dubbed "Fort Knox" by visiting RAF personnel—when they saw the test pit's 14-inch concrete walls and steel doors—this school has, to date, "graduated" more than 250 CAA and Wright Field personnel. It will probably run for two more years to teach the function, operation, and servicing of jet engines to military personnel and others.

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